

REMARKS SECTION:

This is the "OCR remarks text" as required by: (revised) 37 CFR 1.125

REMARKS/ARGUMENTS SECTION

NOTE: The following is the patent examiner's 1st Office Action of 02/14/02 identified changes which the inventor has made to the filed patent application to give the OCR scanable copy (just above):

In the United States Patent and Trademark Office

Serial Number: 09/837,314

Appn. Filed: April 19, 2001

Applicant(s): Kevin Kawakita

Appn. Title: Gravity-fed Liquid Chemical Dispenser Bottle

Examiner/GAU: Mr. Kenneth Bomberg/3754

Mailed: _____

At: _____

Amendment A

Commissioner for Patents

Alexandria, Virginia 22313-1450

Dear Mr. Bomberg:

In response to the Office Letter mailed 6/02/2004 please amend the above application as follows:

REMARKS

GENERAL REMARKS:

1). Inventor will abandon into public art the independent species drawing Fig. 5 for a personal sized, bottom dispensing, 'OIL' bottle.

2). Inventor will file a divisional patent application (DIV) under rule 53(b) for the personal sized, bottom dispensing, 'gravity-spray bottle' species for the relevant specification of this present patent and including relevant specification from the parent patent as well as only relevant patent drawing Fig. 6 of a species of gravity spray bottle.

3). Submit new claims numbered 33 - 56 while abandoning the original claims numbered 1 - 32.

4). Requested drawing changes to fix obvious errors as specified in detail in REMARKS and also to abandon FIG. 5 for the bottom

dispensing oil bottle, to make FIG. 6 for the bottom dispensing, spray bottle a divisional application (DIV) under rule 53(b), and to submit a substitute FIG. 5 for a different perspective view of FIG's 1 - 4 which does not add any new technical material.

The inventor agrees with most of the patent examiner's objections to the specification and original claims.

The inventor wishes to remove the non-formal use of capitalized letters through-out the specification and claims, as per the MPEP rules.

The inventor wishes to state that his:

USPTO Document Disclosure Program (DDP) filing number 483,199 filed on 11/27/2000,

USPTO Provisional Patent Application (PPA) filing number 60/256,103 filed on 12/18/2000, and

USPTO regular patent application (RPA) filing number 09/837,314 filed on 4/19/2001,

all preceded the recent popular commercial revolutionary design and marketing trend found on about 20% of the grocery store shelves of almost all US grocery stores of non-patented, public art, personal

sized, bottom dispensing bottles, and also non-patented, public art, personal sized, bottom dispensing tubes, being self-supporting on their bottom (dispensing) ends without a cardboard box, both appearing on super-market shelves after late year 2002. The inventor has documented in writing and with provable dates that this industry trend started with the Heinz (R) "Easy Squeeze! (R)" brand of bottom dispensing, personal sized, soft plastic, ketchup bottle, press released on 08/28/2002 for first Eastern US sea-board release and then Western European release starting in the UK, followed by Western US sea-board release, after extensive test marketing of unknown duration (documented on a Heinz (R) company Web site print-out). The present inventor had started earlier national marketing efforts on 03/25/2002 using his US Patent Pending status based on the US Provisional Patent Application dated 12/18/2000. These national marketing efforts were made with certified mail return receipt done with several international plastics companies.

SPECIFIC REMARKS:

SPECIFICATION REMARKS

Changes to the Specification:

Added prior art text as given in the cut and paste 'clean-text' section for insertion with detailed insertion rules, for the both newly added prior art text and also more explanatory prior art text on industry standard 'plastic fittings' or 'plastic closures.'

As in appended mark-up text under the new OCR scanning rules, newly matching, added prior art.

The two Fitten patents and the Redmond Sr. patent added to the information disclosure statement (IDS) and brief discussions added to the US Patent prior art section.

The present inventor wishes to expand the 'BACKGROUND - prior art' section for the inclusion of public domain prior art on 'plastic fittings' also called 'plastic closures' which were well known in the plastics and packaging industry for use with top dispensing, personal sized, disposable plastic bottles. These were quite popular in public use without patent coming in both one-body and two-body forms. The predominant manufacturing technology used was one-body and two-body injection molding of plastic resins.

The present inventor wishes to expand the 'BACKGROUND - prior art' section for the inclusion of public domain prior art on 'tube forms' also using prior art 'plastic fittings' or 'plastic closures' which were well known in the plastics and packaging industry for use with top dispensing, personal sized, disposable plastic tubes. The prior art, top dispensing, personal sized bottle and personal sized tube, 'plastic fittings' or 'plastic closures' are simply expanded in size for bottom

dispensing use to avoid top-heavy design. This makes the present inventor's invention a new combination of old parts invention.

The present inventor wishes to append the 'BACKGROUND - Relevant US Patented Inventions' section for the relevant prior art discovered by the patent examiner's thorough prior art search.

DRAWINGS REMARKS:

Changes to the drawings:

A request for drawing amendment based upon obvious errors in the prior art as specified.

1). The present inventor wishes to submit a revised Fig. 1 drawing which corrects an obvious minor mistake shown correctly on Figure 2, of the drawing correction being a missing juncture line for the 'real bottle bottom with nozzle (108)' also called a nozzle fitting with the industry trade name of a 'plastic fitting' or 'plastic closure' mating with the 'liquid chemical bottle body (106),' plus the 'false bottle bottom or stand (112)' is slightly out of proportion.

2). The present inventor wishes to submit a revised Fig. 2 drawing which corrects an obvious minor drawing mistake shown correctly on Fig. 3 and Fig. 4 of a missing juncture line for the 'flip-open/flip-

close nozzle cap (110)' or 'anti-drip nozzle cap' mating with the 'real bottle bottom with nozzle (108)' also called a nozzle fitting.

3). The present inventor wishes to submit a revised Fig. 3 drawing which corrects an obvious minor drawing mistake shown correctly on Figure 2 of a missing juncture line for the 'real bottle bottom with nozzle (108)' also called a nozzle fitting and in industry jargon is called a 'plastic fitting' or 'plastic closure' mating with the 'liquid chemical bottle body (106).'

4). The present inventor wishes to submit a revised Fig. 4 drawing which corrects an obvious drawing mistake shown correctly on Fig. 3 of a missing juncture line for the 'flip-open/flip-close nozzle cap (110)' or 'anti-drip nozzle cap' 'snap-on' mating with the 'real bottle bottom with nozzle (108)' also called a nozzle fitting.

5). The original Fig. 5 on a bottom dispensing, one-time use, disposable bottle, labeled 'OIL' is requested for abandonment as a different species.

6). The drawing Fig. 6 on a bottom dispensing spray bottle as a different species is requested for inclusion in a divisional patent application under rule 53(b).

7). The present inventor requests the inclusion of a new drawing Fig. 5 with projection view of components to give a different perspective of drawing Fig.'s 1 - 4 which replacement Fig. 5 does not

add any new technical material, being solely the depiction of a new use of prior art components in a different perspective with blow-up as all parts are already specified and used in Fig.'s 1 - 4.

The present inventor wishes to submit an entirely new Fig. 5 abandoning the original Fig. 5, which new Fig. 5 adds no new technical material being a different perspective view of Fig.'s 1 - 4 of parts already specified. The new Fig. 5's plastic fitting ribs ('stays' or 'ribs') shown on projection of the real bottle bottom with nozzle (108) or nozzle fitting are from the prior art, of top dispensing, personal sized bottle and tube use which was industry standard design, 'plastic fittings,' or 'plastic closures,' which are simply enlarged in size for bottom dispensing use, personal sized bottle use. The replacement Fig. 5 for the preferred embodiment, does not add any new technical material with any additional detail being from the prior art as was obvious to any median skilled practitioner in plastic packaging design with all possible knowledge of the prior art, but, gives an error correctional view of already specified structural components with a projected view of some components from a different perspective, in light of the obvious errors in the previous drawing figures of the various juncture lines of the assembled bottle in its preferred embodiment. Prior art, industry 'stays' or 'ribs' found in 'plastic fittings' or 'plastic closures' save plastic resin material and give structural support to an inside diameter, female screw-thread, supported by the outside diameter of the 'plastic fitting.' The female screw-thread is screw mated to the male thread on the outside surface of the bottle's

narrow, liquid dispensing opening or second-end neck . The prior art, top dispensing, personal sized bottle and personal sized tube, industry termed 'plastic fittings', or 'plastic fixtures' of many various prior art classifications are simply expanded in size for bottom dispensing, personal sized bottle and personal sized tube use. The inventor's present patent is a utility patent which combines in a new and very useful configuration with greatly improved properties in relevant viscosity, liquid chemical dispensing applications, the prior art, components and manufacturing methods of packaging design based primarily upon a very precise technology of plastics injection molding.

CLAIMS REMAKRS:

The inventor wishes to abandon the original claims numbered 1 - 32 and submit the entire new claims 33 - 56 due to:

1). the three species with one divisional patent application for a 'bottom dispensing spray bottle' and one abandoned species ('bottom dispensing 'OIL' bottle' or low viscosity liquid chemical bottle) leaving only one preferred embodiment species (very high viscosity, liquid chemical, bottom dispensing, 'KETCHUP' bottle).

2). the original claims numbered 1 - 32, being inadequate they are abandoned by the present inventor in entirety with new claims numbered 33 - 56, submitted for the preferred embodiment (very high-viscosity, liquid chemical, bottom dispensing, thick 'KETCHUP' bottle), along with alternative embodiments entitled to the inventor by standard claim legal writing methods of widening the legal scope of the claims by eliminating elements and broadening the scope of the remaining elements, while at the same time not including not impinging upon any known prior art (the prior art Fitten patents and the Redmond patent have been specifically avoided by the present inventor's new claims as explained in the amendments to prior art for these three very relevant patents). The elimination of parts from the preferred embodiment and the additional use of prior art parts well known in the packaging industry to create any alternative embodiments, makes separate drawing figures for alternative

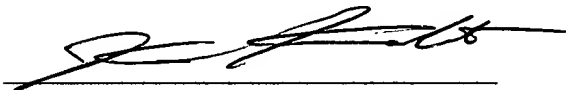
embodiments unnecessary because the invention has already been reduced to practice by the preferred embodiment and such changes are obvious to a median skilled packaging designer with all possible knowledge of prior art and the additional knowledge of this patent describing the preferred embodiment in detail.

The present inventor has simply eliminated elements from the preferred embodiment and then broadened the scope of the remaining elements without adding any new technical material to create the additional embodiments, and has also used structural changes to the preferred embodiment which are obvious to a medium skilled packaging designer with knowledge of all prior art plus knowledge of the preferred embodiment to widen the scope of the claims with care not to impinge upon any prior art in the public domain or any prior art in the patent literature (the two Fitten patents (US Patents No's 5,626,262 and 5,655,687) and the Redmond Sr. patent (US Patent No. 5,868,288) were carefully written out of the present inventor's claims). The new alternative embodiments are for both medium and low viscosity liquid chemical embodiments obtained by simply eliminating elements from the preferred embodiment and broadening the scope of the remaining elements due to less need for air intake from less viscous liquid chemicals. Various alternative tube form embodiments for medium viscosity liquid chemical are also obvious to a medium skilled packaging designer with knowledge of all prior art plus knowledge of the preferred embodiment. The use of prior art from personal sized, top-dispensing bottles and tubes, 'plastic fittings' or 'plastic closures' which are simply enlarged in size for use with

bottom dispensing, personal sized, bottles and tubes, creates literally about eleven cubed or 1331 permutations of known prior art attachments on the top opening and bottom opening of the preferred embodiment's, two open ended with male threaded screw-on openings, liquid chemical bottle body, plus the permutations of the flip-open and flip-close or reversible anti-drip nozzle cap having a reversible anti-drip mechanism device attaching to the male screw-on thread on the exterior of the nozzle. Even the present inventor's alternative embodiments for medium viscosity liquid chemicals, use of a prior art, 'plastic fitting' or 'plastic closure' upon just the liquid chemical bottle body's narrow, liquid dispensing opening or second-end neck, opening with male screw-on thread on its exterior, alone gives eleven basic permutations of using prior art, 'plastic fitting' or 'plastic closure' parts. The present inventor's alternative embodiment for very low viscosity liquid chemicals, uses a prior art, 'plastic fitting' or 'plastic closure' upon both the liquid chemical bottle body's narrow, liquid dispensing opening or second-end neck, having a male screw-on thread around the exterior of the second-end neck, for attachment of a real bottle bottom with nozzle or nozzle fitting with a narrow, throat opening or nozzle, plus a reversible anti-drip mechanism means of a 'flip-open and flip-close nozzle cap' which is a 'plastic fitting' with a base having female screw-on thread which mates with male screw-on thread on the exterior of the nozzle. The two screw-on pieces gives eleven squared or 121 known permutations. It is not possible and not legally required under the US Patent Appeals Court's 'Doctrine of Equivalents (Graver Tank US Supreme Court decision on the Patent Act of 1790 before the enactment

of claims language), plus the refinement of Jepson or German patent style legal claims language established by the US Supreme Court's Halliburton Oil Well Cementing Company vs. Walker case (329 US 1) of 1946 in conjunction with the subsequent US Congress's revision to the Patent Act of 1836 (which had established the Jepson style patent) which together established the 'means clause ['doctrine of equivalents' of means, structure, or result as always applied at the low level of structure specified by a specific means clause always in reference to the structure of at least one embodiment]' in involving at least two or more claim elements which makes it unnecessary and even structurally impossible for the inventor to state in the claims and also the drawing figures every possible embodiment or known permutation within the scope of the patent claims.

Very Respectfully Yours,



Signature

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APR 22, 2004

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This is the "mark-up text" OCR version which indicates mark-up changes over the previous amendment patent application. A separate mark-up copy of all claims and a full history of all mark-up claims is included.

CONVENTIONS - (as per 37 CFR 1.121 for OCR scanning) all changes from the
originally filed USPTO regular patent application are made in
"underline text" to indicate added text changes, plus the use of
~~"strike-out text"~~ to indicate removed text, with both changes
relative only to the previous Amendment (X - 1) submitted to the
USPTO.

TITLE: A gravity-fed liquid chemical dispenser bottle.

CROSS REFERENCES TO MY RELATED APPLICATIONS:

None

BACKGROUND OF THE INVENTION:

FIELD OF INVENTION

This invention relates to food container packaging and dispenser bottles in particular to condiment dispenser bottles (e.g. ketchup bottles, thick salad dressing bottles, mustard bottles, relish bottles, mayonnaise bottles, etc.).

This invention also relates to pharmaceutical and cosmetic packaging and dispenser bottles (e.g. hand and body lotion bottles, shampoo bottles, liquid soap bottles, perfume bottles, etc.).

This invention also relates to automobile chemical packaging and dispenser bottles (e.g. motor oil bottles, anti-freeze bottles, hydraulic fluid bottles, transmission fluid bottles, anti-freeze bottles, fuel-injection cleaner bottles, gas and oil treatment bottles, etc.).

This invention also relates to household chemical packaging and dispenser bottles (e.g. glass cleaner spray bottles, tile cleaner spray bottles, etc.).

PATENT CLASS: Utility Patent in the Machine class.

PATENT SUBCLASS:

Disposable liquid chemical packaging and dispensing devices

Disposable food packaging devices.

Disposable cosmetic and pharmaceutical packaging devices.

Disposable auto chemical devices.

Disposable household chemical packaging devices.

CROSS-REFERENCE TO MY RELATED US PATENTS: None.

REFERENCES: to other US patents

US Patent No. 1,660,606. Date of Issue: Feb. 28, 1928, Filing
Date: April 19, 1926, Issued to: Evans, Hopkins

US Patent No. 2,779,472. Date of Issue: Jan. 29, 1957, Filing
Date: April 6, 1953, Issued to: Febbraro, Mario.

US Patent No. 4,428,507. Date of Issue: January 31, 1984, Filing
Date: June 21, 1982, Issued to: Sneider, Vincent R.

US Patent No. 4,516,697. Date of Issue: May 14, 1985, Filing Date:
September 22, 1982, Issued to: Dreps, James R.

US Patent No. 4,762,241. Date of Issue: August 9, 1988, Filing
Date: Feb. 5, 1987, Issued to: Lang, Richard R.

US Patent No. 4,930,668. Date of Issue: June 5, 1990, Filing Date:
February 2, 1989, Issued to: Krall, Thomas J.

US Patent No. 5,033,655. Date of Issue: July 23, 1991, Filing
Date: April 25, 1989, Issued to: Brown, Paul E.

US Patent No. 5,060,830. Date of Issue: October 29, 1991, Filing
Date: January 11, 1990, Issued to: Krall, Thomas J.

US Patent No. 5,133,482. Date of Issue: July 28, 1992, Filing
Date: November 28, 1990, Issued to: Burrows, Bruce D.

US Patent No. 5,141,136. Date of Issue: August 25, 1992, Filing
Date: Jan. 25, 1991, Issued to: Tignor, Jeffrey H.

US Patent No. 5,421,488. Date of Issue: June 6, 1995, Filing Date:
June 17, 1994, Issued to: Ehrbar, James J.

US Patent No. 5,482,172. Date of Issue: Jan. 9, 1996, Filing Date:
Sep. 16, 1993, Issued to: Braddock, Calvin C.

US Patent No. 5,626,262. Date of Issue: May 6, 1997, Filing Date:
Jan. 7, 1995, Issued to: Fitten, Timothy E.

US Patent No. 5,655,687. Date of Issue: Aug. 12, 1997, Filing
Date: Jan. 7, 1995, Issued to: Fitten, Timothy E.

US Patent No. 5,819,984. Date of Issue: Oct. 13, 1998, Filing
Date: Jan. 23 1997, Issued to: Krueger, Kurtis W..

US Patent No. 5,868,288. Date of Issue: Feb. 9, 1999, Filing Date:
Feb. 21 1997, Issued to: Redmond, Thomas M. Sr.

US Patent No. 6,161,737. Date of Issue: Dec. 19, 2000, Filing
Date: Feb. 2, 1999, Issued to: Leary, Cornelius F.

US Patent No. 6,494,346. Date of Issue: Dec. 17, 2002, Filing
Date: Jan. 25, 2001, Issued to: Gross, Richard A.

US Design Patent No. 315,096. Date of Issue: March 5, 1991, Filing
Date: Jan. 12, 1987, Issued to: Rocchio, Chris A.

REFERENCES TO FOREIGN PATENTS: None

DISCUSSION OF PRIOR ART:

Public Domain Usage

Public domain usage of prior art household sized, food container and dispensing bottles are glass bottles, plastic bottles, squeezable plastic bottles (upright) which dispense from a top nozzle or opening.

There are also prior art uses of disposable, squeezable plastic and aluminum, individual serving container size, condiment dispensers for take-out restaurants.

There are prior art, patented uses of gravity-fed, industrial size dispenser packaging and holder dispensers for use in fast food restaurants and convenience stores which use industrial size, large 3-5 gallon size, upside down, replaceable "service packs" to dispense soft drinks, condiments, hot chili, melted cheddar cheese topping, etc.

No current manufacturer of food containers currently has an effective solution for a household sized, personal-use sized, gravity-fed, condiment packaging and dispenser bottle with bottom dispensing in public domain usage, patent pending, or patented usage.

[NOTE: Start of cut and paste section.]

There were many problems with the prior art of personal sized, bottom dispensing bottle ('gravity bottle') use which prevented their wide-spread use. The major still existing, long-felt need, problems which were unsolved as clearly shown by the prior art descriptions being:

1). inconvenient customer use with a variety of causes with some being: messy drips, poor anti-drip control of very low viscosity liquid chemical, even high viscosity liquid chemical having non-emulsified watery liquid (which usually floats to the top due to lower density caused buoyancy under Archimedes principle which benefits bottom dispensing bottles which without any need for shaking in many cases, avoids dispensing non-emulsified liquids unlike the top dispensing bottles which require pre-use extensive, customer shaking in most cases) discharges, drips and stains of liquid chemical left on the counter-top or medicine cabinet shelf, drips of liquid chemical left in undesired places on the bottle itself.

2). costs to manufacture exceeded the usual less than y. 2000 US 0.05 dollars per container for essentially a recyclable/disposable, one-time use container with the manufacturer's entire profit on the liquid chemical plus bottle only being y. 2000 US 0.05 dollars or less, and the super-market's entire profit on selling the liquid chemical plus bottle being less than US 0.01

dollars or less than 1% of sales dollar at the super-market level. Some states would add a re-cycling deposit (e.g. California redemption value itemized on a store receipt) per re-cyclable plastic bottle of US 0.05 dollars per bottle to encourage plastic re-cycling efforts which is consumer returned at the re-cycling center. Too much plastics material use in any plastic bottle design will drive up the plastic material cost above US 0.05 cents per disposable bottle discouraging manufacturers use of certain bottle designs. The top dispensing, personal sized bottles had 'plastic fittings' or 'plastic closures' which were less than 1/ 2" in diameter and were usually made of high density polyethylene compound (HDPE) which meant a manufacturer's cost of less than US 0.02 per plastic fitting. The plastic fitting if of too large a diameter for bottom dispensing use on the order of 2.5" while producing a non-top-heavy design, increases material cost for the plastic fitting to about US 0.07 per plastic fitting meaning that the manufacturer must reduce liquid chemical volumes to earn the same net profit.

3). poor protection of the liquid chemical against oxidation degradation (liquid chemical break-down due to atmospheric air exposure), contamination of liquid chemical by counter-top and air-born dust and dirt, contamination of liquid chemical by counter-top and air-born virus, bacteria, and fungi (bathroom air is full of airborne biological contaminants from toilet use), contamination of liquid chemical by bugs and insects (cockroaches will eat anything edible and are attracted by smells).

4). inability to water clean-off the bottom dispensing valve without diluting or contaminating the liquid chemical with chlorinated tap water.

Pharmaceutical containers and dispensers as for shampoos exist in prior art full commercial use as of the USPTO Document Disclosure (USPTO DDP) filing date of this invention (11/27/2000) in prior art existed only as personal sized, top dispensing only, soft plastic, squeezable bottles made of high density polyethylene compound (really a long chemical name) (HDPE or re-cycling triangle 2) 'soft plastic,' squeezable plastic containers, with an integrated high density polyethylene compound (HDPE or re-cycling triangle 2), one-piece, two-cavity with a permanent molded flap connecting the two cavity mold, plastic injection molded, top nozzle and a removable cap 'plastic fitting' or 'plastic closure' which was typically less than 1" in diameter to reduce material resin costs. The two piece unit design of one unit of personal sized, top dispensing, 'soft plastic (squeezable)' high-density polyethylene-compound (HDPE) bottle, and one unit of high-density polyethylene-compound (HDPE) 'plastic fitting' also called a 'plastic closure' cap (usually attaches by female screw thread onto the male screw thread of the bottle's bottom-end neck) is standard in prior art with the usually female screw thread on the inside of the 'plastic fitting' or 'plastic closure' cap, screw-on attachment 'plastic fitting' or 'plastic closure' available in many prior art designs mentioned just below.

The generic industry non-trade name or technical jargon of a 'plastic fitting' or 'plastic closure' of various prior art classifications is typically made of a screw-on attachment female thread on the internal sides of the non-dispensing end of the 'plastic fitting' which screws onto the male thread molded onto the outside nozzle of the bottle. The prior art 'plastic fitting' or 'plastic closure' is usually of one piece construction using a two-cavity injection mold with a permanent molded flap joining the two-cavity mold to mold the two separate parts of the plastic fitting. Only food use plastics are re-cyclable due to the guaranteed absence of toxic chemicals. The plastic bottle material may be of various kinds classified by US Plastics Council re-cycling materials:

1). Polyethylene tirmopielene (PET) or (PETE) bottles (recycling triangle 1):

A). harder clear plastic, polyethylene tirmopielene (PET) (e.g. Pepsi (R) 2 liter bottles) (re-cycling recycling triangle 1).

B). simple plastic caps (e.g. Pepsi (R) 2 liter bottle caps) using a simple, colored, screw-on, high-density polyethylene compound (HDPE) (re-cycling recycling triangle 2), simple screw-on plastic 'cap' being made from a one-cavity body injection mold.

C). Also prior art, personal sized, top dispensing, squeezable (soft), Heinz (R) ketchup bottles in personal size, top dispensing, bottles made of 'soft plastic' high density polyethylene compound (HDPE) (re-cycling recycling triangle 2), using a matching also high density polyethylene compound (HDPE), one-piece, two cavity connected by a permanent flap, injection molded, flip-open and flip-close lid with the permanent, flexible plastic hinge connecting the two body parts of the white, 'plastic fitting' or 'plastic closure.' Female screw thread on the insides of the 'plastic fitting' base screw attaches upon the male threaded dispensing-end neck of the top dispensing, personal sized, high density polyethylene compound (HDPE) or 'soft plastic' squeeze bottle. The 'plastic fitting' was very small being less than 1" in diameter to keep material resin costs low and because of no need to make it larger.

2). High Density Polyethylene compound (really a long chemical name) (HDPE) (recycling triangle 2):

A). Large 1 galloon, top-dispensing milk jug bottles made of high density polyethylene compound (HDPE) (re-cycling upside down triangle 2) were prior art in early year 2000. A matching one-piece, simple, HDPE, screw-on, simple cap usually white in color was common prior art.

B). Large 1 galloon, orange juice containers made of high density polyethylene compound (HDPE) (re-cycling triangle 2)

usually a distinctive orange color were prior art in early year 2000. A matching usually white in color, HDPE, screw-on, simple cap was common prior art.

C). Disposable, top-dispensing personal sized, many colored, motor oil containers.

D). Squeezable 'soft plastics' making up many house-hold, top dispensing plastic 'squeeze' containers. e.g. Heinz (R) top dispensing ketchup bottles with a small white, one-piece, two cavity injection molded (with a permanent plastic hinge joining the two cavities), flip-open/flip-close 'snap-action,' screw-on 'plastic fitting' or 'plastic closure.'

E). Personal sized, house-hold use, packaging tubes as of the United States Patent and Trademark Office (USPTO) Document Disclosure (USPTO DDP) filing date of this invention (11/27/2000), existed in prior art as store packaged, cellophane wrap, tamper seal wrapped, cardboard boxes containing the tubes. During shipment the individual cardboard boxes were stored upright in a cardboard shipping box. The individual cardboard box was necessary to store the usually elongated oval tube sideways at the store shelf for presentation without falling off the shelf in tube form, which was the store packaging standard form encountered by the customer before package opening (possible tamper seal, cellophane, shrink-wrap breaking), tube use and liquid or paste chemical dispensing from the tube by

rolling or semi-rolling up the tube. The cardboard packaging for the tube was for store storage purposes only and anti-tamper use and was in most cases promptly thrown away upon package cellophane wrap opening wasting y. 2000 several US cents per package. The cardboard box also contained detailed paper directions which duplicated more abstracted instructions printed on the cardboard box with the tube sides also having even briefer printed instructions. In the event, the customer kept the cardboard box to store the open and semi-used tube, the paper instructions stored in the cardboard box would usually get stained with paste chemical. The tube usually being coiled with use, had limited product information. Older aluminum tubes as of toothpaste and cream pharmaceuticals were obsolete by the 1980's, being replaced by high density polyethylene compound (HDPE) squeezable, 'soft plastic' tubes. The semi-used, semi-coiled, high density polyethylene compound (HDPE) tube typically existed in a semi-curved form stored sideways in a home medicine cabinet or on a bathroom counter in an ugly and space inefficient storage position. The top-dispensing, tiny cap (less than 1/ 4" in diameter) was too tiny to support the tube. If the customer kept the cardboard box to store the curled tube, the tube could be kept inside of the usually greasy spot stained card-board box in various orientations.

e.g. Crest (R) toothpaste in prior art used a top-dispensing, personal sized, side-ways stored, 'soft plastic (HDPE)' squeezable, semi-coilable, tube which had a male

threaded screw-on, dispensing-end neck upon which was screwed a female threaded, screw-on, base of a flip-open/flip-close 'snap action' nozzle cap, with the 'plastic fitting' composed of a one-piece, two cavity injection molded (with a permanent plastic hinge joining the two cavities) 'plastic fitting' or 'plastic closure.' The Crest (R) toothpaste 'plastic fitting' consisted of a one-piece, white colored, two-cavity injection molded (with a permanent plastic hinge connecting the two cavities), the two molded bodies of cap and base being connected by a permanent molded plastic hinge, flip-open and flip-close cap with a snap-on action, the base had a screw-on attachment to the male threaded exterior of the tube dispensing-end neck. The toothpaste tube was sold in a cellophane shrink-wrap, tamper sealed (all food products and internally taken pharmaceuticals only), cardboard box which was extra cost of y. 2000 several US 0.02 per package which was usually thrown away at first use, but, necessary for store shelf storage. The prior art toothpaste tube was typically stored in the home medicine cabinet stored sideways in a semi-used curled condition which was space inefficient and ugly in appearance.

3). Poly-vinyl chloride (PVC) (re-cycling triangle 3) for older plastics now more common in plumbing pipe.

4). Plastic film low density polyethylene (LDPE) (re-cycling triangle 4) e.g. transparent plastic, stretchy, store vegetable

plastic bags, newspaper bags. Collected usually only at in grocery store collection bins.

5). Polypropylene (re-cycling triangle 5). e.g. opaque, white, hard plastic, sour cream plastic containers, yogurt containers.

6). Poly-styrene (re-cycling triangle 6) (Federally registered trade name of Styrofoam (R) brand of disposable hot cup or disposable hot plate):

e.g. Micro-waveable, opaque white, food trays used for micro-waveable prepared take-out foods, and also the opaque white, cups used for hot beverage, disposable cups. Styrene (re-cycling triangle 6) is the transparent, hard plastic also used for prepared food trays.

7). Miscellaneous plastics (re-cycling triangle 7). Older ketchup and syrup bottles.

Prior art, top-dispensing, side-ways stored in semi-dispensed, curled form or semi-curved form, tubes had prior art 'tube filling' manufacturing operations which accounted for the tube design. The prior art factory time tube filling operation was done by the factory receiving plastic tubes open on both ends with one end having a narrow, dispensing-end neck with external male thread used to receive the internal female thread of an injection molded, two-cavity, one piece, screw-on, specific 'plastic fitting' or 'plastic closure' type

called a flip-open and flip-close lid with a snap-on action of cap to base, with a flexible plastic hinge joining the two cavities of the cap and the base. A human operator or machine would screw-on the plastic fitting onto a prior art toothpaste tube's threaded, dispensing end, neck with the plastic fitting end placed pointed downwards in an assembly line for a 'filling operation' which left the open end of the tube pointed upwards. A perfectly cylindrical tube would need small indentations ('positioning lugs') to help alignment equipment align the tube for proper label printing in an 'alignment operation.' A printing operation would print the label directly on the plastic in a label 'printing operation.' A 'filling operation' machine would inject toothpaste into the open end of the tube pointing towards the factory ceiling. A 'sealing operation' would use heat and clamps to place plastic heat lugs upon the sealed open end of the tube to hermetically seal it. The finished tube unit would be ejected from the assembly line to have to undergo a separate cardboard 'boxing operation' and then a 'plastic shrink-wrap' anti-tamper seal operation.

A 'plastic fitting' or 'plastic closure' may be of a different plastic type than the plastic bottle, but, in modern y. 2003 use both are typically made of squeezable, 'soft plastic' or high density polyethylene compound (HDPE). Typically the plastic fitting has an internal to its cap female thread, which screw attaches onto the bottle neck's exterior male thread. The narrow, throat opening or nozzle which actually squirts out the liquid chemical or paste is on the plastic fitting, which is usually a two-cavity injection molded

plastic part with one-cavity being the nozzle mold and the other cavity being the integrated, cap mold with a possible permanent anti-misplacement flap connecting the two-cavity mold. The female thread on the interior sides of the plastic fitting or plastic closure is in most cases of two cavity mold plastic fittings having a base and a nozzle cap type, narrower in diameter than the plastic fitting itself, since, the bottle neck with male thread on its exterior surface is a narrow, liquid dispensing opening which is narrower than the bottle diameter itself. The female thread in the interior of the plastic fitting has attached to its inner diameter 'stays' or 'ribs' made of plastic to structurally support the inside diameter from the outside diameter.

In the prior art for a personal sized, top-dispensing plastic bottle, 'plastic fittings' or 'plastic closures' come in different classifications of very precisely manufactured to within plus or minus 0.001" (1/1,000 inch) tolerances (usually plastic injection molded as 'plastic fittings' or 'plastic closures' in one-piece using single cavity or double cavity injection molds) of mechanical closure, plastic caps, and 'plastic fitting' devices. The various classifications of prior art, 'plastic fittings,' for top-dispensing bottles and tubes were:

- 1). A one-piece, snap-on/snap-off, 'lid cap fitting,' (e.g. top dispensing squeeze plastic ketchup bottles and similar bar-b-que sauce bottles) with permanent lid attachment flap which keeps the lid attached to the base of the fitting even when the fitting

is in the 'open' position of dispensing. The lid cap will typically 'snap-close' onto the base unit of the fitting using an indented base rim. The interior of the base unit has a female thread which attaches to the male thread of the plastic bottle nozzle exterior. This sort of fitting is typically used in prior art, top dispensing, table sized, squeeze plastic ketchup bottles and bar-b-que sauce bottles. This fitting is made for very large squirt dispenses and even pours.

2). A two-piece, snap-on/snap-off, 'lid cap fitting' (e.g. convenience plastic bottles) with no lid attachment flap with the lid loose when the lid cap is in the open position. The lid cap will typically 'snap-close' onto the base of the fitting using a protruding lip on the rim of the base unit. The base unit has an internal female thread to screw attach to the external male thread of the plastic bottle nozzle's, narrow throat opening, exterior. This sort of fitting is typically used in prior art, large plastic convenience bottles.

3). A two-piece, snap-open/snap-close, 'semi-lid-cap fitting' (e.g. shampoo bottles, hand-cream bottles) with a semi-permanently snapped in partial cap lid using a central one-piece plastic partial cap which acts like a disk fitting, with a built-in central bar which protrudes on two sides from the disk edges, with the base unit having a recessed, conforming, disk shaped opening with a central main dispensing hole, with a central bar snap fitting on two sides of the recess, the disk rotates around

the bar when semi-permanently snap inserted into the base to open and close the fitting. The disk lid will typically thumb or finger action 'snap-close' onto the base of the fitting using a two-tab protruding disk edge. The base unit typically has a female thread on its interior which attaches onto the male thread on the plastic bottle nozzle's exterior. This sort of fitting is common in shampoo bottles, two closures on both ends of a single fitting on large spice bottles (with a continuous pour base unit hole and shaking action base unit holes), two closures on both sides of a single fitting on small spice bottles (with a continuous pour base unit hole and shaking action base unit holes), and is a hybrid cross between a lid fitting and a disk fitting which gives an opening in-between a very large opening, full snap-open/snap-close attached lid fitting and a very small opening 'disk fitting.' This fitting is made for medium squirt dispenses.

4). A two-piece, snap-open/snap-close, 'disk fitting' (e.g. shampoo bottles) with a semi-permanently snapped in disk lid using a central one-piece plastic disk with a built-in plastic bar, with a recessed, conforming, disk shaped opening having a central main dispensing hole, with a central bar snap fitting, the disk rotates around the bar when permanently snap inserted into the base to open and close the fitting. The disk lid will typically 'snap-close' onto the base of the fitting using a two-tab protruding rim. The base unit has an interior female screw thread which attaches to a male exterior screw thread on the

plastic bottle's nozzle exterior. This sort of fitting is common in shampoo bottles. This fitting is made for smaller squirt dispenses as in shampoos.

5). A two-piece, bend-open/bend-close, 'swivel nozzle fitting' (e.g. sport's water bottles, shampoo bottles, dishwashing soap plastic squeeze bottles) with a semi-permanently snapped in extruding nozzle using a central one-piece plastic nozzle (with a length-wise central nozzle hole) with a built-in towards the bottom-end cross-axis of the nozzle, plastic centered bar, the nozzle rotates around the axis of the cross-axis centered bar when it in turn is semi-permanently snap inserted into special openings in the base unit to open and close the nozzle in a rotating action. The nozzle lid will typically 'snap-close' onto the base of the fitting using a recessed base in the shape of the nozzle with the central main dispensing hole, with two protruding snap-rims near the nozzle's tip end. This sort of fitting is common in shampoo bottles, and dish washing soap bottles. The nozzle dispensing opening is very small and is made for small squirt dispenses.

6). A two-piece, screw-open/screw-down, 'screw action cone shaped closure fitting,' (e.g. mustard bottles) which attaches upon a base which is in the form of a permanently extended, cone shaped, nozzle base unit having a nozzle interior opening which the 'screw action cone shaped closure' covers up when fully screwed-down. The base unit has a permanent, protruding, nozzle

having a built-in exterior male thread for the cone shaped closure's interior female thread. The base unit has interior female thread for attachment onto the male thread of the plastic bottle's nozzle exterior. Although in two-piece, the fitting semi-permanently screws and snaps onto the nozzle base in a factory operation which the customer normally does not undo. This sort of fitting is common in table-top, squeezable, top dispensing, mustard bottles which is a much denser liquid than others. It is also common in top-dispensing, house-hold, glue bottles which is also an extremely dense liquid chemical. These very dense liquid chemicals typically leave the squeezable plastic PET (R) containers deformed from an insufficient amount of air on the intake of air stroke through the nozzle or opening which always accompanies an outtake of liquid stroke (Nature abhors a vacuum), especially with a squeezable bottle low in liquid chemical. However, the intake stroke of atmospheric air is often not 'long enough' in both duration and intake pressure to fully non-deform the squeezable bottle from vacuum pressure due to the high viscosity of some liquid chemicals being both internal viscosity and viscosity with the container. The customer can simply use manual pressure actions on the outside of the squeezable container in a transverse direction to the semi-permanent container deformation to force air into the squeezable plastic bottle through the liquid dispensing opening, and then the customer can close the screw-close and screw-open closure as in prior art top dispensing bottles requiring a very tight hermetic seal (e.g. house-hold glue bottles or mustard bottles),

or alternatively the flip-open and flip-close closure as in prior art top dispensing bottles (e.g. shampoo bottles or ketchup bottles). The prior art, personal sized, squeezable, top dispensing screw-open and screw-close bottles typically use a three piece design:

a). a squeezable plastic bottle made of polyethylene tirmopyolene (PET or PETE or re-cycling triangle 1) with a paper label with a top of bottle, narrow liquid dispensing opening having an exterior male screw thread.

b). a second one-piece 'plastic fitting' or 'plastic closure' with a male screw threaded nozzle and a screw-on base made of high density polypropylene-compound (HDPE or re-cycling triangle 2) which screws onto the male thread on the exterior of the narrow, liquid dispensing opening of the plastic bottle with the male screw thread on the narrow, liquid dispensing opening having an initial snap-on protrusion to minimize misplacement of the screw-on and screw-off nozzle cap.

c). a third one-piece, prior art plastic fitting is a screw-on and screw-off nozzle cap which has a female screw-thread on its inner parts with an initial snap-on protrusion to minimize misplacement of the screw-on and screw-off nozzle cap.

This type prior art, personal sized, top dispensing, squeeze plastic bottle with a screw-on and screw-off nozzle cap is prized for a hermetic seal on chemicals prone to oxidation (e.g. white house-hold glue) or strong food odor leakage (e.g. personal sized, squeezable, top dispensing yellow mustard plastic bottles). These personal sized, squeezable, plastic bottles due to the very high chemical liquid viscosity often suffer from permanent deformation even after full unassisted air intake on the squeeze outstroke from human hand removal. The deformation occurs because the dense liquid chemical produces a suction which cannot be overcome by the anti-vacuum action of incoming air, with the customer often having to manually 're-inflate' or 'un-bend' the semi-permanently deformed squeezable plastic bottle by repeated flexing actions. Otherwise, a semi-permanently deformed squeezable container results from the inwards force of a partial air vacuum, plus the inwards force of the liquid chemical viscosity with itself and with the container sides, plus the inwards structural force of the squeezed and semi-permanently deformed container which meets an opposing small outwards force of the unassisted air intake through the nozzle to try and counter-balance the inwards force to no avail. The squeezable bottle is left in unsightly condition. Numerous hand activated bottle deflation efforts through bottle squeezing in a direction transverse to the bottle deformation must occur to re-inflate the bottle to a non-deformation state. This type of screw-on and screw-off plastic closure is also prized for extremely dense liquid chemicals in which the manufacturer

desires the opening to stay mechanically open until the customer mechanically closes it to allow for as much air volume intake as possible which will supplement manual bottle deformation efforts.

7). A two-piece, screw-open/screw-close base with a permanently square to the cap nozzle with a 'pull-open/push-close donut shaped bead cap or spout cap (e.g. older sport's water bottles, y. 2003 dishwashing soap bottles). The pull-open/push-close donut shaped bead or spout cap has a round interior opening which semi-permanently, snap-on attaches to the permanently square to the cap, round nozzle of the base unit. The round permanently square to the cap nozzle has a "T" shaped, internal, nozzle channel shape which "top-bar" of the "T" is covered up by the sliding donut shaped bead or spout cap in the fully closed position, and the "top-bar" of the "T" is exposed by the sliding donut shaped bead or spout cap in a fully open position. The base unit has a permanently square to the cap, round, nozzle having no exterior male thread, but, is used to guide the sliding open and sliding close motion of the plastic donut shaped bead or spout cap with its round central opening, respectively, in the customer's pull-open/push-close sliding motion action. Although two-piece, the sliding donut shaped bead or spout cap closure, semi-permanently, snaps onto the nozzle base using two protruding tabs on the base unit's nozzle tip, which limits within pressure limits, the maximum pull-open sliding motion. The maximum pull-close sliding motion is determined by the donut shaped bead cap

or spout cap when maximally push-closed physically hitting the base unit end of nozzle. This sort of fitting is common in athlete's water bottles, modern liquid dishwashing soap bottles, and table-top, squeezable, top dispensing bottles of water-like liquid chemical density requiring large and long dispenses with every customer squeeze action on the squeezable plastic bottle.

8). A one-piece cap, screw-open/screw-close, child safety plastic cap (e.g. aspirin bottles (pills without liquid), medicine vials (pills without liquid), which attaches upon a plastic bottle or a plastic medicine vial. This sort of special screw-on cap is not a 'plastic fitting' but opening the closed bottle requires a typical push down and hold down the cap towards the bottle while at the same time doing a counter-clockwise screw open the cap action which requires only a few degrees of turn. Clockwise screw action closure is done with only a few degrees of turn and does not require any special user motion. The fully closed container is not fully water tight. The mechanism on the vial protruding circular rim is a series of jagged protruding male gear-like lock teeth which engage only when the cap is held towards the vial with pressure. The mechanism on the cap is on a protruding circular internal to the cap rim which also has female gear-like lock teeth which engage and mate the opposing male lock teeth on the vial only when the cap is held towards the vial with pressure. Only a few degrees of rotation either locks or unlocks the mated opposing gear teeth. This sort of fitting is common in prescription medication vials (for pills without liquid).

9). A one-piece, cap which opening motion while fully closed upon a plastic bottle requires rotating and aligning the arrow on the rotating lid with an arrow on the plastic bottle rim first, and then squeezing the cap on two opposing ends only at the two arrow points inwards towards the cap center while at the same time turning counter-clockwise to open the cap from the bottle, with this motion repeated after 180 degrees every time the two arrow align themselves. The closing action is like a normal screw on cap except that every 180 degrees there is a 'clicking sound' and the cap bumps slightly upwards until the cap is completely screwed-on tight (e.g. popular in house-hold chemicals and older prescription medication plastic vials). This type of child safety plastic cap, attaches upon a matching plastic bottle with a regular male screw thread pattern upon the external part of the bottle rim, excepting that the male screw thread has protruding 'speed bumps' every 180 degrees. The special one-piece cap has an internal regular female screw thread along with one-way gear teeth every 180 degrees which are designed to work with the 'speed bumps' on the rim. The human align the arrow in the cap and the rim action is required to line the one-way gear teeth with the 'speed bumps' in the rim. The human inwards squeeze action on the cap towards the cap center only at the two opposing arrow points is required to allow the one-way gear teeth in the cap to expand outwards around the 'speed bumps' on the male thread on the outside rim of the bottle which normally without the inwards squeeze motion, prevent

counter-clockwise opening motion. The same action must be repeated every 180 degrees indicated as the arrow on the cap and the rim line up. The fully clockwise turn closed cap is a screw-on fitting and is water tight. A child might loosen the cap by less than 180 degrees, but, the release of liquid chemical is prevented. This sort of special cap is not a 'fitting' but requires a typical align the arrow first, then push down, and then hold down and screw open action. Screw action closure is as normal with a detent clicking resistance and sound. This sort of fitting is common in prescription medications and household chemicals.

10). A two-piece cap, which to open requires that the user push the cap towards the bottle and then at the same time, rotate counter-clockwise to open the cap from the bottle. Closing the bottle is a normal clockwise screw-on action of the cap upon the male screw thread on the external rim of the bottle except that when the cap is fully screw-closed based upon the end of the male thread the cap will make a 'clicking noise' as the two sets of gear teeth in the two-piece cap disengage and rattle on top of each other (e.g. medicine bottles, house-hold cleaning fluids). This type of child safety plastic cap, attaches upon a matching plastic bottle with a rim with a regular male screw thread pattern upon the external part of the rim. The two-piece child safety cap has an inner rotating diameter with outwards facing one-way gear teeth, and an offset outer rotating diameter with inwards facing one-way gear teeth. The two sets of gear teeth in

the two-piece cap being initially offset in height when the bottle is placed upon a table, do not mate unless the cap is pushed downwards towards the bottle while at the same time turning counter-clockwise to open the cap from the bottle. This particular action is required to engage the gear teeth such that the inner diameter piece of the two-piece cap will also turn and release from the bottle. This sort of special cap is not a 'fitting' but requires a typical push down the cap towards the bottle while simultaneously counter-clockwise turning to open the cap from the bottle. Screw action closure is as normal with a detent clicking resistance and sound when the two sets of gears in the two-piece cap disengage. This sort of fitting is common in prescription medications and household chemicals.

11). Two entirely separate piece, top dispensing, personal sized tubes with a silicone slit valve which is glue attached inside of a 'plastic fitting' or 'plastic closure' two-cavity injection molded nozzle plus nozzle cap connected by a permanent anti-misplacement plastic hinge molded by a thin plastic strip joining the two-cavity mold. The 'plastic fitting' cap with silicone valve screw attaches onto the top of a top-dispensing, personal sized squeeze tube.

These classifications of 'plastic fittings' or 'plastic closures' worked equally well in prior art on either plastic squeeze bottles (e.g. made of PET (R) hard plastic, or HDPE (R)) soft plastic/squeezable plastic, or else on plastic tubes made of the same

materials. Prior art plastic tubes are in the factory manufactured as table-sized, or medicine counter dispenser lengthened, convenience sized, plastic tubes with two open-ends. One open-end of the tube is heat formed into a nozzle with a male thread screw attachment on the outside of the nozzle. A prior art classification of 'plastic fitting' is machine screwed onto the tube nozzle end. The one-half manufactured, but, empty tube open on the other end is usually hand-oriented and placed open tube side up into a 'tube filling operation' assembly line. The original tubes were aluminum but these were replaced with soft plastic in the 1980's. The single plastic fitting per tube of one of the above plastic fitting classifications, is carefully chosen by design. The 'filling machine' will then one by one squeeze the pre-mixed, liquid chemical or cream into the top, open-end of the tube (e.g. toothpaste tube filling operation which can even use multi-colored creams in a swirl pattern). Another sealing machine will heat seal with plastic lugs the open-end to form the completed tube unit. The prior art 'skinny tubes' would not stand up on-top of a prior art tiny plastic fitting which was typically $1/5^{\text{th}}$ the tube diameter. Therefore, the prior art tubes also required a cardboard box plus cellophane wrapping. The cardboard box was necessary for store sales where the tubes were either stood up on end or sold stacked sideways. The prior art tubes when in use were coiled from the non-fitting end and laid side-ways upon the bathroom counter or in the medicine cabinet creating a huge waste of air-space and a huge mess of coiled tubes for house inhabitants, visitors coming often meant dumping tubes into a card-

board box and hiding the box under the sink until the visitors were gone.

The recycling of plastics hand separated by universal (American Plastics Council) recycling triangle recycling symbol designations molded into the plastic (usually bottom of container) is a very important environmental consideration, since, plastics do not decompose readily and pose a danger to wild-life from swallowing and choking as well as the unsightly visible pollution caused by plastic trash litter which decomposes very slowly without ultra-violet (UV) light break-down. Schedule 40 PVC plastic was specially designed for PVC irrigation piping to delay UV damage which made previous PVC irrigation piping very brittle with ageing from UV exposure. Biodegradable plastics designed for land fill use with built-in harmless starch which acts as food for anaerobic bacteria activated by water and soil are a prior art research item.

[NOTE: End - cut and paste section.]

Auto chemical containers and dispensers for motor oil and anti-freeze use high density polyethylene compound plastic (HDPE) with a plastic, screw-on, top cap.

Household chemicals use plastic bottles with index finger, push-spray tops, pour or squirt spouts. High density polyethylene compound plastic (HDPE) is popular for low cost and recycling as well as chemically inert properties. Glass is used for long lasting, more expensive dispensing and is prized for its non-reactance or inert properties. Aerosol cans are used only where necessary and an environmentally sound (non-Freon) propellant is used.

The US Patent literature prior art has several patents for gravity-fed, liquid chemical, dispenser bottles. None of these has been put into widespread, commercial use due to several basic design flaws.

US Patent No. 6,161,737

Date of Issue: Dec. 19, 2000

Filing Date: Feb. 2, 1999

Issued to: Leary, Cornelius F.

This patent covers a bottom dispensing, household sized, rectangular shaped, liquid chemical packaging dispenser with a built-in handle on top and a flip-down, side-mounted nozzle. The flip-down motion opens and closes the nozzle.

This patent does not have a dedicated, top mounted ventilation hole protected by a one-way diaphragm which allows air down, but, does not allow liquid to move up. ~~My patent~~ The present inventor's patent in its preferred embodiment intended for extremely viscous liquid chemicals includes such a valve. This dedicated, top mounted ventilation hole is necessary for proper efficient dispensing in order to avoid production of a vacuum inside the container with continuous dispensing actions. Otherwise, air must enter from the bottom spout after one, dispensing, liquid squeeze uses up the available air in the closed container. Interrupted dispensing actions allow air to come back up through the single bottom spout in a "hiccup" action with non-viscous liquids and failed operation with viscous liquids causing the user to turn the bottle right-side up which clears viscous liquid out of the bottom nozzle. The Leary patent has no means whatsoever for top ventilation while dispensing from the bottom nozzle.

This Leary patent also does not have a drip catching removable bottom piece, so, liquid drips will fall on a table or floor. The present inventor's patent both in its preferred embodiment for a very high viscosity liquid chemical, and also in a 1st alternative embodiment for a very low viscosity liquid chemical which uses a closed top of container of the preferred embodiment, and also for a 2nd alternative embodiment for medium viscosity liquid chemical which both seals off the top of the first embodiment and removes the flip-open and flip-close nozzle cap or reversible anti-drip cap, with all embodiments

having a false bottle bottom also called a drip-catching cap stand to prevent this problem.

This Leary patent mentions no recessed bottom with a built-in, stand to cover the bottom-nozzle and bottom-cap.

[NOTE: New section inserted.]

US Patent No. 5,868,288

Date of Issue: Feb. 9, 1999

Filing Date: Feb. 21, 1997

Issued to: Redmond, Sr. et al. of

Redmond Products Inc.

This patent covers a bottom dispensing, personal sized, specified perfectly symmetrically round in cross-section and cylindrical in shape through the specified use of 'alignment lugs (used in labeling and printing operations only for perfectly round container alignment)' and 'positioning lugs (used in bottle top automated assembly only for perfectly round container alignment)', liquid chemical packaging dispenser with a screw-on dispensing cap upon the bottom of the bottle in the gravity-fed, normal dispensing position, which dispensing cap has a factory built-in, gravity dispensing, quad-cusped valve (four-flapped valve or cross-slit valve) or some other form which does not require dispensing cap removal for liquid dispensing. The use of the Redmond Sr. patent's striped appearing indentations in the plastic ('alignment lugs') on the usually soft squeeze plastic bottle sides, is required only for perfectly symmetrically round cross-section bottles, for use by automated factory alignment equipment where the bottle is factory-time only aligned with its normal either top or bottom dispensing end facing towards the factory ceiling for a fully automated, machine aligning operation and then machine labeling or else direct printing operation. The 'alignment lugs' along the perfectly

cylindrical bottle's sides are used for automatic bottle alignment only in machines putting the labeling on the correct position to miss the two side seams, having no other optical means of alignment to avoid placing a label or direct printing upon the two seams on the bottle sides. A fully automated machine liquid top fill operation follows into the un-capped bottle placed open tube side pointed towards the ceiling. A fully automated machine top capping operation follows which is usually a female screw-on 'plastic fitting' or 'plastic closure' onto the male screw thread on the outer neck of the bottle. A perfectly cylindrical bottle only will need two near the neck of the bottle opening Redmond Sr. patent 'positioning lugs (two indentations near the bottle neck)' which are used for automated cap assembly and are not necessary for non-symmetric bottle tops which give alignment information from non-symmetric shape. The liquid filled, bottom dispensing bottle (gravity bottle) is in an assembly line upside down from the normal use position in gravity-fed dispensing with the uncapped, open bottle facing towards the ceiling, and automated factory capping equipment first aligns the top of the bottle using the Redmond Sr. patent's designed two 'positioning lugs' and then attaches the cap from the top. The Redmond Sr. patent is invented by the same invention team as the two earlier Fitten patents and is very similar in size and function following several Fitten US design patents.

This Redmond Sr. patent in its normal, gravity-fed, dispensing position does not have an anti-drip cap which functions as a table stand on its bottom end and also as either a primary or secondary anti-drip catching receptacle on its opposite end, unlike my patent. A

secondary anti-drip containment lid as a design option is missing in the Redmond Sr. patent which could contain unavoidable drips. Any drips in the Redmond Sr. patent will end up on the table or counter, on the floor, or on the medicine cabinet, and accumulated drips on the bottom of the Redmond, Sr. dispensing cap will also collect unsightly and un-hygienic dirt and dust. This dirt and dust problem will necessitate either expensive anti-tamper sealing or a cardboard box for store retail sale due to customer attempts to squeeze the bottle. At home customer use of the bottle in its normal gravity-fed dispensing position exposes the dispensing cap to dust and dirt accumulation which is un-hygienic. Customer attempts at washing off the unavoidable accumulated dust and dirt coming from normal use will result in water entering the container especially if the container is squeezed during washing. The Redmond Sr. structure in the normal gravity-fed dispensing operation is not water-tight due to the pressure sensitive, quad-cusped, valve on the bottom dispensing cap. The hermetic sealing of the quad-cusped, valve on the bottom positioned dispensing cap is unknown which might be required for chemical anti-oxidation considerations at all times even on the store shelf. This Redmond Sr. patent specifies through the use of both "alignment lugs (for labeling and bottle printing)" and "positioning lugs (for automatic capping)" a perfectly round cross-section, cylindrical bottle which furthermore must have an equal diameter on the bottom and the top of the bottle which is not the optimum shape for a bottom dispensing, anti-top heavy, designed bottle. A cylindrical container clearly rules out an optimized anti-top heavy design which should be of greater diameter at the bottom and smaller diameter at the top. A perfectly round cap

receptacle in the Redmond Sr. patent requiring "positioning lugs" is a major disadvantage. A perfectly symmetric in cross-section container rules out the patent's use for non-symmetric tube shapes which are usually oval in cross-section with varying cross-section diameter over length. Tubes in the factory are usually non-symmetric cross-section, elliptical structures which are open at one end with the opposing end having a male threaded, dispensing-end, single neck for 'plastic fitting' or 'plastic closure' attachment (e.g. Crest (R) toothpaste tube), whose first end is heat formed into a plastic nozzle with a male screw thread upon the outside of the nozzle, and then the plastic tube fitting or tube cap is hand or machine screwed onto the end of the tube. Then the tube with the top end still open for filling is placed dispensing-end, single neck side down in an assembly line with the open tube end pointing upwards for the fully automated tube, liquid fill operation. The tube seal operation is fully automated usually through machine crimping, and machine heat annealing of plastic using "heat seal lugs." The Redmond Sr. patent's specified 'alignment lugs' and 'positioning lugs' require shape symmetry on the cross-section, cap-end, and top to bottom equal diameters of cross-sections, also prevents an anti-top-heavy design of top to bottom shape in the normal dispensing position.

[NOTE: End of cut and paste insertion.]

[NOTE: new section inserted.]

US Patent No. 5,655,687

Date of Issue: Aug. 12, 1997

Filing Date: Jun. 7, 1995

Issued to: Fitten, Timothy E.

Assigned to: Redmond Products, Inc.

Chanhassen, Minn.

This second Fitten patent (filed on the same day as the first Fitten patent) covers a bottom dispensing, personal sized, specified equal diameter on the top of the bottle and the bottom of the bottle (to fit the travel cap on both ends), liquid chemical packaging dispenser with a factory assembled, dispensing cap which is at the factory screw-on attached to the bottom of the bottle in the normal, gravity-fed, dispensing position and configuration. The dispensing cap or 'plastic fitting' or 'plastic closure' has a glue attached inside the screw-on 'plastic fitting' or 'plastic closure,' for use in a bottom dispensing (gravity bottle), user hand-squeeze, pressure activated, silicone cross-slit valve (quad-cusped valve), anti-drip valve which does not require dispensing cap removal for liquid chemical dispensing. The bottom-dispensing bottle in its normal use configuration rests directly with the dispensing cap ('plastic fitting') resting on a table or counter-top with the separate 'travel cap' being screwed on the top of the bottle and only used in transit and travel, which requires a wide diameter and surface area for the dispensing cap ('plastic closure') to avoid the tipping over forces of gravity. The silicone, anti-drip,

cross-slit valve (quad-cusped valve) glued in the internal center of the dispensing cap ('plastic fitting') stops the liquid from dispensing with gravitational force unless the soft plastic bottle is squeezed by hand which opens up the valve with the valve closing by itself with removal of the hand squeezing pressure. A hand squeeze outtake stroke of liquid with plastic bottle deformation dispenses liquid chemical, while the intake stroke of outside air from plastic bottle reformation sucks in air to prevent a vacuum. This action is suitable for slightly viscous liquids, but, is not suitable for extremely viscous liquids such as house-hold white glues, and mustards. The dispensing cap ('plastic fitting') must be round to make use of the Fitten patent detents ('positioning lugs') and is also required to be the same diameter as the travel cap. The round travel cap being used on both ends of the bottle, absolutely requires the same diameter at both the bottom of the cylindrical shaped bottle. Furthermore, the round travel cap being used on both ends of the bottle, requires a perfectly round diameter top and bottom of the bottle. Furthermore, the neck of the Fitten patent bottle has two indents ('positioning indents') used for automatic capping operation bottle alignment. The travel cap is attached to the top of the bottle in the normal use configuration and to the bottom of the bottle only in the travel configuration. The separate, screw-on, travel cap is specified for use only in covering the dispensing cap ('plastic fixture') in traveling or mobile transport of the Fitten container.

This Fitten patent's 'travel cap' in its normal dispensing position and configuration is screwed out of the way on the top of the bottle (requiring a perfectly round top of bottle with a top diameter equal to the bottom diameter) in intended dispensing position, and does not serve as an anti-drip cap with both water and hermetic sealing which could potentially also function as a permanent table stand on its dispensing or bottom end. The normal dispensing Fitten patent bottom dispensing bottle when stored on a bathroom counter-top or medicine cabinet rests upon the dispensing cap ('plastic fixture') with the cross-slit silicone valve possibly leaking out non-emulsified liquids and also letting air intake into the liquid chemical with oxidation damage to the liquid chemical, also with highly possible bacterial and virus contamination in the atmospheric air intake, also with highly possible dirt and dust contamination of the liquid chemical which will accumulate upon the unavoidable, exposed liquid chemical collected on the bottom of the dispensing cap ('plastic fixture'). The present inventor's false bottle bottom or drip cap stand serves depending upon embodiment as either a primary or a secondary drip catching receptacle on its bottom end giving permanent hermetic seal (with air born bacteria and viral protection and liquid chemical oxidation damage), permanent water sealing, permanent dirt and dust sealing, permanent light and subset UV sealing, and permanent odor and fragrance sealing protection to the liquid chemical. Therefore, the Fitten patent will allow unavoidable unsightly floor drips and table drips as well as accumulation of dirt and dust on the un-capped dispensing cap ('plastic fixture') with the further problem of losing a hermetic seal to prevent

liquid chemical oxidation whenever the liquid chemical is not in use. The resulting problem of a non-hermetic seal is oxidation particularly undesired for food and pharmaceuticals due to gradually breaking down almost all chemicals at different rates. The effects of UV light exposure also breaks down liquid chemical depending upon molecular chemistry compositions. Oxidation and UV light with a food supply are necessary for many aerobic bacterial, yeast, and insect multiplication processes. Continuous oxidation produces either odors or fragrances which can either be from the liquid chemical or from bacterial by-products. Anaerobic bacteria reproduce without oxygen and are often killed by both oxygen and UV light exposure. The use of a Fitten patent 'travel cap' vs. the present inventor's false bottle bottom or drip-cap stand introduces sanitation problems with accumulations of dirt and dust and possible bacterial contamination problems in the Fitten patent. The Fitten patent 'travel cap' does not serve the purpose of hermetic seal, drip catching, anti-dirt and anti-dust accumulation plus ease of water washing the sealed unit off because the 'travel cap' is screw-attached to the top of the container in the normal dispensing configuration. The Fitten patent top attachment position will leave unsightly and sticky liquid chemical on the top of the plastic bottle which will also attract dirt, dust, and dangerous bacteria which will be picked up in an undesirable manner on customer's hands and also on other contacted close objects with continued travel cap use. The Fitten patent top of bottle has no guarantees of hygienic condition before travel cap attachment to begin with accumulated dust, bacteria, and viruses being highly probable. Furthermore, if the Fitten patent travel cap was used as an anti-drip cap, liquid chemical

would end up eventually in an undesired and potentially messy, unhygienic, and possibly bacterial prone manner on the top of the container. A secondary anti-drip containment valve in addition to the cross-slit valve as a design option is missing in the Fitten patent to fully contain the potentially messy and unavoidable drips from bottom dispensing operation of very low viscosity liquid chemical. Any drips will end up on the table or counter, on the floor, or on the medicine cabinet, and drips on the bottom of the Fitten patent in the normal use position and configuration will also collect unsightly and unhygienic dirt and dust. It is assumed that the travel cap will be in the travel configuration screwed upon the bottom of the bottle at the retail store sale. This dirt and dust potential problem with customer's trying out the product at the store will necessitate either expensive anti-tamper sealing or a sealed cardboard box for store retail sale. Tamper sealing is used only for food products and prescription drugs, but, not common pharmaceuticals used externally which customer's like to test sample before buying. Customer attempts at washing off the unavoidable accumulated dust and dirt coming from normal use in the normal use position and configuration will result in water entering the container through the cross-slit, silicone valve (not water-tight and not air-tight) especially if the container is squeezed during washing. The Fitten patent structure in the normal use configuration is not water-tight and not light and UV tight, and is not suitable for pharmaceuticals and ointment medications due to hygienic problems with dust, dirt, and germs. The hermetic sealing of the cross-slit silicone valve inside the dispensing cap ('plastic fitting') is not complete

which means chemical oxidation considerations in the normal use position and configuration.

This Fitten patent specifies through patent claims use of the travel cap on both the bottom and top of the container, that the travel cap diameter must equal the bottom of the container's diameter which must equal the top of the container's diameter. This requirement means that a maximized anti-top heavy design is not possible. This shape requirement also rules out the use of tubes in the Fitten patent. Tubes in the factory are usually non-symmetric cross-section structures which are open on both ends, whose first end is hand or machine closed through use of the plastic tube fitting or tube cap, and then placed upside-down in an assembly line with the open tube end pointing upwards for the fully automated liquid fill, and tube seal operation usually through heat annealing of plastic using "heat seal lugs." The specified normal use configuration of the 'travel cap' being on the top of the container with the container resting on the dispensing cap upon a table or counter-top means that the dispensing cap ('plastic fitting') as well as the travel cap must have a broad base for stability. The two relatively large diameter structures mean maximized material cost which will make the Fitten container uneconomic for a disposable container, but, is suitable for a re-usable container or luxury item container. The present inventor's patent stops liquid chemical oxidation, UV light exposure, possible bacterial, yeast, and insect infestation, unwanted drips, dirt and dust accumulation, and is easy to wash off at the faucet as a completely closed both water tight and hermetically sealed unit.

[NOTE: End of new section insertion.]

[NOTE: New section insertion.]

US Patent No. 5,626,262.

Date of Issue: May 6, 1997

Filing Date: Jun. 7, 1995

Issued to: Fitten, Timothy E.

Assigned to: Redmond Products, Inc.

Chanhausen, Minn.

This first of two Fitten patents followed by several US design patents and subsequent continuation with the Redmond Sr. patent covers a personal sized, bottom dispensing (without 'travel cap'), bottle with human squeezing action on the bottle body, liquid chemical packaging dispenser with a factory assembled, dispensing cap ('plastic fitting') which is at the factory screw-on attached to the bottom of the bottle body in the normal dispensing position and configuration of gravity-fed operation. The dispensing cap ('plastic fitting') has an internal to its dispensing end, glue attached through a central positioned hole, gravity-fed and squeeze dispensing, pressure fed, silicone cross-slit (quad-cusped valve), anti-drip valve. The dispensing cap ('plastic fitting') is not removed in dispensing operation and has no form of covering or travel cap (corrected in the other Fitten US patent number 5,655,687 filed upon the same day which also had near the neck 'positioning detents' for automatic cap attachment in a perfectly round bottle). The dispensing cap ('plastic fitting') rests directly upon a flat surface such as a table or counter. One embodiment of the Fitten patent adds a tiny protruding circular ridge which runs around the

perimeter of the dispensing cap ('plastic fitting'), done to create a circular dam to catch excess fluid flow meant to stop stains upon the table or counter. An entirely separate Fitten patent with a 'travel cap' was filed on the same day to solve the problem of stains upon the table or counter and to give a hermetic seal while traveling or in transit.

The first Fitten patent having no travel cap is obviously defective with regards to staining tables and counters from unavoidable and unwanted liquid chemical drips, oxidation problems and UV light breakdown of liquid chemical since the travel cap may be a hermetic seal but the cross-slit silicone valve is not a hermetic seal, unhygienic accumulations of dirt and dust and possibly bacteria upon the exposed liquid chemical left on the plastic fitting, and also leaks from accidental bottle squeezing. The second Fitten patent with a travel cap was filed on the same day as this first Fitten patent. The fact that the dispensing cap ('plastic fitting') with its internal glue attached, central, silicone cross-slit valve rests directly upon a table or counter necessitates a rather large cylindrical structure for anti-stability from forced, non top-heavy design which means a large amount of material and cost.

[NOTE: End of new insertion section.]

US Patent No. 5,482,172

Date of Issue: Jan. 9, 1996

Filing Date: Sep. 16, 1993

Issued to: Braddock, Calvin C.

This patent covers a symmetric, either top dispensing, or bottom dispensing, rectangular shaped, household sized, liquid chemical packaging dispenser with a flip-cap exposed, top nozzle and a flip-cap exposed, bottom nozzle. The liquid chemical held inside the rectangular shaped, dispenser can flow to either nozzle as there is no preferred top or bottom side.

This patent does not have as in the present inventor's preferred embodiment for extremely viscous liquid chemicals a dedicated, top mounted ventilation hole protected by a one-way diaphragm which allows air down, but, does not allow liquid to move up. My patent includes such a valve. This dedicated, top mounted ventilation hole in as in the present inventor's preferred embodiment intended for extremely viscous liquid chemicals is necessary for proper efficient dispensing in order to avoid production of a vacuum inside the container with continuous dispensing actions. Otherwise, air must enter from the bottom spout after one, dispensing, liquid squeeze uses up the available air in the closed container. Interrupted dispensing actions allows air to come back up through the single bottom spout in a "hiccup" action with non-viscous liquids and failed operation with viscous liquids causing the user to turn the bottle right-side up which clears viscous liquid out of the bottom-nozzle.

This Braddock patent will allow use of the current top nozzle as an air intake nozzle even when it is not designed or specified for this purpose while the liquid dispensing occurs on the current bottom nozzle. The drawback of this Braddock design is that viscous and air hardened, liquid chemical will in all probability clog the current top nozzle blocking the air intake of a duo-use nozzle.

This Braddock patent also does not have a drip catching removable bottom piece, so, liquid drips will fall on a table or floor. The present inventor's patent both in its preferred embodiment for a very high viscosity liquid chemical, and also in a 1st alternative embodiment for a very low viscosity liquid chemical which uses a closed top of container of the preferred embodiment (also enabling a tube design), and also for a 2nd alternative embodiment for medium viscosity liquid chemical which both seals off the top of the first embodiment (also enabling a tube design) and removes the flip-open and flip-close nozzle cap or reversible anti-drip nozzle cap, all embodiments have a false bottle bottom or drip-catching cap stand to prevent this problem.

This Braddock patent mentions no recessed bottom with a built-in, stand to cover the bottom-nozzle and bottom-cap.

US Patent No. 5,421,488

Date of Issue: June 6, 1995

Filing Date: June 17, 1994

Issued to: Ehrbar, James J.

This patent covers a symmetric, either top dispensing, or bottom dispensing, cylindrical shaped, household sized, liquid chemical packaging dispenser with a flip-cap exposed, top nozzle and a flip-cap exposed, bottom nozzle. The liquid chemical cavity inside the cylindrical shaped, dispenser can flow to either nozzle as there is no preferred top or bottom side.

This patent does not have a dedicated, top mounted ventilation hole as in the present inventor's preferred embodiment for extremely viscous liquid chemicals protected by a one-way diaphragm which allows air down, but, does not allow liquid to move up. My patent includes such a valve. This top mounted ventilation hole is necessary for proper efficient dispensing in order to avoid production of a vacuum inside the container with continuous dispensing actions. Otherwise, air must enter from the bottom spout after one, dispensing, liquid squeeze uses up the available air in the closed container. Interrupted dispensing actions allows air to come back up through the single bottom spout in a "hiccup" action with non-viscous liquids and failed operation with viscous liquids causing the user to turn the bottle right-side up which clears viscous liquid out of the bottom-nozzle.

This Ehrbar patent will allow use of the current top nozzle as an air intake nozzle even when it is not designed or specified for this purpose while the liquid dispensing occurs on the current bottom nozzle. The drawback of this Ehrbar, design is that viscous and air hardened, liquid chemical will in all probability clog the current top nozzle blocking the air intake of a duo-use nozzle.

This Ehrbar patent also does not have a drip catching removable bottom piece, so, liquid drips will fall on a table or floor. The present inventor's patent both in its preferred embodiment for a very high viscosity liquid chemical, and also in a 1st alternative embodiment for a very low viscosity liquid chemical which uses a closed top of container of the preferred embodiment, and also for a 2nd alternative embodiment for medium viscosity liquid chemical which both seals off the top of the first embodiment and removes the flip-open and flip-close nozzle cap also called a reversible anti-drip nozzle cap, both embodiments have a false bottle bottom or drip-catching stand to prevent this problem.

This Ehrbar patent mentions no recessed bottom with a built-in, stand to cover the bottom-nozzle and bottom-cap.

US Patent No. 5,141,136

Date of Issue: August 25, 1992

Filing Date: Jan. 25, 1991

Issued to: Tignor, Jeffrey H.

This patent covers a house-hold, viscous liquid dispensing, plastic bottle with an open top having a removable cap and a sealed bottom with a nozzle and removable cap which bottom-nozzle and bottom-cap are contained within a recessed formation which also serves as a built-in, bottle stand. The liquid chemical held inside the bottle shaped, dispenser can flow to either top or bottom nozzle with top dispensing used most of the time and bottom dispensing used when the bottle is low with liquid chemical.

This patent does not have a dedicated, top mounted ventilation hole protected by a one-way diaphragm as in the present inventor's preferred embodiment intended for extremely viscous liquid chemicals which allows air down, but, does not allow liquid to move up. My patent includes such a valve. This dedicated, top mounted ventilation hole is necessary for proper efficient dispensing in order to avoid production of a vacuum inside the container with continuous dispensing actions. Otherwise, air must enter from the bottom spout after one, dispensing, liquid squeeze uses up the available air in the closed container. Interrupted dispensing actions allows air to come back up through the single bottom spout in a "hiccup" action with non-viscous liquids and failed operation with viscous liquids causing the user to turn the

bottle right-side up which clears viscous liquid out of the bottom-nozzle.

This Tignor patent will allow use of the dual-use, removable, top cap as an air intake even when it is not designed or specified for this purpose while the liquid dispensing occurs on the single-use, bottom nozzle. Viscous and air hardened, liquid chemical will in all probability not clog or partially clog the Tignor design by blocking or reducing the air intake of a duo-use top cap if it is large enough. As specified in the design and legal claims of the Tignor patent, the top opening is covered by a removable cap. A removable cap is not the best choice for an air nozzle as the cap must be stored somewhere and re-fastened after use.

This Tignor patent also does not have a drip catching removable bottom piece, so, liquid drips will fall on a table or floor. The present inventor's patent both in its preferred embodiment for a very high viscosity liquid chemical, and also in a 1st alternative embodiment for a very low viscosity liquid chemical which uses a closed top of container of the preferred embodiment, and also for a 2nd alternative embodiment for medium viscosity liquid chemical which both seals off the top of the first embodiment and removes the flip-open and flip-close nozzle cap also called a reversible anti-drip nozzle cap, all embodiments have a false bottle bottom or drip-catching stand to prevent this problem.

This Tignor patent mentions a recessed bottom with a built-in, stand to cover the bottom-nozzle and bottom-cap.

US Patent No. 5,033,655

Date of Issue: July 23, 1991

Filing Date: April 25, 1989

Issued to: Brown, Paul E.

This patent covers a house-hold, viscous liquid dispensing, squeezable, plastic bottle with a top having a small opening which is capped with a hand-activated, top-cap, a sealed bottom with a bottom-nozzle covered by various embodiments of pressure activated, self-sealing, self-opening and self-closing, bottom-caps which bottom-nozzle and bottom-cap is optionally contained within a recessed formation which also serves as a built-in, bottle stand. The dispenser works with either top or bottom dispensing of liquid chemical. The liquid chemical held inside the bottle shaped, dispenser flows by gravity to dispense from the top opening if the top cap is manually removed with a flipped over bottle. Alternatively, the liquid chemical is pressure forced out of the pressure activated bottom-nozzle. An optional snap-on, drip catching, bottom-cap safety cover is mentioned.

The top opening has no stated design or legal claims mention of duo-use for liquid dispensing with a flipped over bottle with the top cap manually removed or air intake from the top opening with the bottle used in right-side up for bottom dispensing. In fact duo-use of the top cap for air intake in this design is physically impossible. If the top opening without a cap is used for air intake for right-side up, bottom dispensing, hand-squeezing pressure on the deformable sides of the bottle will not produce enough pressure to activate the pressure

activated, self-sealing, bottom-nozzle. In bottom-feed operation, the top opening must be closed by manual sealing with the top cap to allow side pressure build-up to activate the pressure activated, self-sealing, bottom-nozzle.

This patent does not have a dedicated, top mounted ventilation hole protected by a one-way diaphragm as in the present inventor's preferred embodiment intended for extremely viscous liquid chemicals which allows air down, but, does not allow liquid to move up. My patent includes such a valve. This dedicated, top mounted ventilation hole is necessary for proper efficient dispensing in order to avoid production of a vacuum inside the container with continuous dispensing actions. Otherwise, air must enter from the bottom spout after one, dispensing, liquid squeeze uses up the available air in the closed container. Interrupted dispensing actions allow air to come back up through the single bottom spout in a "hiccup" action with non-viscous liquids and failed operation with viscous liquids causing the user to turn the bottle right-side up which clears viscous liquid out of the bottom-nozzle.

This Brown patent will physically not allow dual-use of the top opening as an air intake opening or top dispensing opening. As mentioned in the design and legal claims of the Brown patent, the bottom nozzle must be of a pressure activated, self-sealing, self-opening and self-closing, design of various embodiments. My patent does not have this design or legal claim. Furthermore, the Brown design will not work efficiently in continuous dispensing of non-

viscous fluids and with one "squeeze" action with viscous liquids due to the absence of any form of top mounted ventilation hole.

This Brown patent also describes optional use of a separate drip catching removable bottom piece, so, liquid drips will not fall on a table or floor. The present inventor's patent both in its preferred embodiment for a very high viscosity liquid chemical, and also in a 1st alternative embodiment for a very low viscosity liquid chemical which uses a closed top of container of the preferred embodiment, and also for a 2nd alternative embodiment for medium viscosity liquid chemical which both seals off the top of the first embodiment and removes the flip-open and flip-close nozzle cap also called a reversible anti-drip nozzle cap, all embodiments have a false bottle bottom or drip-catching stand to prevent this problem.

This Brown patent mentions an optional recessed bottom with a built-in, stand to cover the bottom-nozzle and bottom-cap.

US Patent No. 4,762,241

Date of Issue: August 9, 1988

Filing Date: Feb. 5, 1987

Issued to: Lang, Richard R.

This patent covers a house-hold, viscous liquid dispensing, bottle with an top with a small opening having a removable cap and a sealed bottom with a nozzle and removable cap which bottle's bottom may be optionally sloped towards the rim-mounted bottom-nozzle and bottom-cap.

The liquid chemical held inside the bottle shaped, dispenser can flow to either top opening or bottom nozzle. Top dispensing is used most of the time with bottom dispensing used when the bottle is low with liquid chemical.

This patent does not have a dedicated, top mounted ventilation hole protected by a one-way diaphragm which allows air down, but, does not allow liquid to move up. ~~My patent~~ The present inventor's patent in its preferred embodiment for extremely viscous liquid chemicals includes such a valve. This dedicated, top mounted ventilation hole is necessary for proper efficient dispensing in order to avoid production of a vacuum inside the container with continuous dispensing actions. Otherwise, air must enter from the bottom spout after one, dispensing, liquid squeeze uses up the available air in the closed container. Interrupted dispensing actions allows air to come back up through the single bottom spout in a "hiccup" action with non-viscous liquids and failed operation with viscous liquids causing the user to turn the

bottle right-side up which clears viscous liquid out of the bottom-nozzle.

This Lang patent will allow use of the dual-use, top nozzle as an air intake opening even when it is not designed or specified for this purpose while the liquid dispensing occurs on the single-use, bottom nozzle. The drawback of this Lang design is that viscous and air hardened, liquid chemical will in all probability clog or partially clog the current top opening blocking or reducing the air intake of a duo-use nozzle. If the top opening is made large it will reduce such air blockage problems. As specified in the design and legal claims of the Lang patent, the top opening is covered by a removable cap. A removable cap is not the best choice for an air opening as the cap must be stored somewhere and re-fastened after use.

This Lang patent also does not have a drip catching removable bottom piece, so, liquid drips will fall on a table or floor. The present inventor's patent both in its preferred embodiment for a very high viscosity liquid chemical, and also in a 1st alternative embodiment for a very low viscosity liquid chemical which uses a closed top of container of the preferred embodiment, and also for a 2nd alternative embodiment for medium viscosity liquid chemical which both seals off the top of the first embodiment and removes the flip-open and flip-close nozzle cap also called a reversible anti-drip nozzle cap, all embodiments have a false bottle bottom or drip-catching stand to prevent this problem.

This Lang patent describes a recessed bottom with a built-in, stand to cover the bottom-nozzle and bottom-cap.

US Patent No. 4,428,507

Date of Issue: January 31, 1984

Filing Date: June 21, 1982

Issued to: Sneider, Vincent R.

This patent covers a house-hold, viscous liquid dispensing, bottle with a cylindrical shape, accordion side-walls, closed top having a push-in, pull-out nozzle, and a sealed bottom with a nozzle and twist-open, twist-close spigot.

The liquid chemical held inside the cylindrical shaped, dispenser can flow to either top or bottom nozzle with top dispensing used most of the time and bottom dispensing used when the bottle is low with liquid chemical.

This patent does not have a dedicated, top mounted ventilation hole protected by a one-way diaphragm which allows air down, but, does not allow liquid to move up. ~~My patent~~ The present inventor's patent in its preferred embodiment for extremely viscous liquid chemicals includes such a valve. This dedicated, top mounted ventilation hole is necessary for proper efficient dispensing in order to avoid production of a vacuum inside the container with continuous dispensing actions. Otherwise, air must enter from the bottom spout after one, dispensing, liquid squeeze uses up the available air in the closed container. Interrupted dispensing actions allows air to come back up through the single bottom spout in a "hiccup" action with non-viscous liquids and failed operation with viscous liquids causing the user to turn the

bottle right-side up which clears viscous liquid out of the bottom-nozzle.

This Sneider patent will allow use of the dual-use, top nozzle as an air intake nozzle even when it is not designed or specified for this purpose while the liquid dispensing occurs on the single-use, bottom nozzle. The drawback of this Sneider design is that viscous and air hardened, liquid chemical will in all probability clog or partially clog the current top nozzle blocking or reducing the air intake of a duo-use nozzle. If the top nozzle is made large it will reduce such air blockage problems.

This Sneider patent also does not have a drip catching removable bottom piece, so, liquid drips will fall on a table or floor. The present inventor's patent both in its preferred embodiment for a very high viscosity liquid chemical, and also in a 1st alternative embodiment for a very low viscosity liquid chemical which uses a closed top of container of the preferred embodiment, and also for a 2nd alternative embodiment for medium viscosity liquid chemical which both seals off the top of the first embodiment and removes the flip-open and flip-close nozzle cap also called a reversible anti-drip nozzle cap, all embodiments have a false bottle bottom or drip-catching stand to prevent this problem.

This Sneider patent describes a recessed bottom with a built-in, stand to cover the bottom-nozzle and bottom-cap.

US Patent No. 2,779,472

Date of Issue: Jan. 29, 1957

Filing Date: April 6, 1953

Issued to: Febbraro, Mario

This patent covers a house-hold, liquid dispensing, bottle with an open top having a removable cap and a sealed bottom with a nozzle and removable cap which bottle's bottom has a built-in sediment trap for filtering liquids such as wine.

The liquid chemical held inside the bottle shaped, dispenser can flow to either top or bottom nozzle with top dispensing used most of the time and bottom dispensing used when the bottle is low with liquid chemical.

This patent does not have a dedicated, top mounted ventilation hole protected by a one-way diaphragm which allows air down, but, does not allow liquid to move up. ~~My patent~~ The present inventor's patent in its preferred embodiment for extremely viscous liquid chemicals includes such a valve. This dedicated, top mounted ventilation hole is necessary for proper efficient dispensing in order to avoid production of a vacuum inside the container with continuous dispensing actions. Otherwise, air must enter from the bottom spout after one, dispensing, liquid squeeze uses up the available air in the closed container. Interrupted dispensing actions allows air to come back up through the single bottom spout in a "hiccup" action with non-viscous liquids and failed operation with viscous liquids causing the user to turn the

bottle right-side up which clears viscous liquid out of the bottom-nozzle.

This Febbraro patent will allow use of the dual-use, top opening as an air intake opening even when it is not designed or specified for this purpose while the liquid dispensing occurs on the single-use, bottom nozzle. The drawback of this Febbraro design is that viscous and air hardened, liquid chemical will in all probability clog or partially clog the current top opening blocking or reducing the air intake of a duo-use opening. If the top opening is made large it will reduce such air blockage problems. As specified in the design and legal claims of the Febbraro patent, the top opening is covered by a removable cap. A removable cap is not the best choice for an air nozzle as the cap must be stored somewhere and re-fastened after use.

This Febbraro patent also does not have a drip catching removable bottom piece, so, liquid drips will fall on a table or floor. The present inventor's patent both in its preferred embodiment for a very high viscosity liquid chemical, and also in a 1st alternative embodiment for a very low viscosity liquid chemical which uses a closed top of container of the preferred embodiment, and also for a 2nd alternative embodiment for medium viscosity liquid chemical which both seals off the top of the first embodiment and removes the flip-open and flip-close nozzle cap also called a reversible anti-drip nozzle cap, all embodiments have a false bottle bottom or drip-catching stand to prevent this problem.

This Febbraro patent describes a recessed bottom with a built-in, stand to cover the bottom-nozzle and bottom-cap.

US Patent No. 1,660,606

Date of Issue: Feb. 28, 1928

Filing Date: April 19, 1926

Issued to: Evans, Hopkins

This patent covers a house-hold, liquid dispensing, bottle shaped like a glass, milk-bottle, with an open top having a removable cap and a screw-on, sealed bottom without the use of any opening or nozzle. This bottle is intended for top dispensing only. The screw-on, sealed bottom is merely used in factory maintenance at the bottling plant to allow easier either end and through the ends cleaning and scrubbing of used bottles such as re-usable glass milk and glass cola bottles.

This patent does not have a dedicated, top mounted ventilation hole protected by a one-way diaphragm which allows air down, but, does not allow liquid to move up. ~~My patent~~ The present inventor's patent in its preferred embodiment for extremely viscous liquid chemicals includes such a valve. This dedicated, top mounted ventilation hole is necessary for proper efficient dispensing in order to avoid production of a vacuum inside the container with continuous dispensing actions. Otherwise, air must enter from the bottom spout after one, dispensing, liquid squeeze uses up the available air in the closed container. Interrupted dispensing actions allows air to come back up through the single bottom spout in a "hiccup" action with non-viscous liquids and failed operation with viscous liquids causing the user to turn the bottle right-side up which clears viscous liquid out of the bottom-nozzle.

This Evans patent also does not have a drip catching removable bottom piece, as, bottom dispensing is not allowed.

US Design Patent No. 315,096

Date of Issue: March 5, 1991

Filing Date: Jan. 12, 1987

Issued to: Rocchio, Chris A.

This design patent covers a house-hold, liquid dispensing, bottle with an open top having a removable cap and a sealed bottom with a nozzle and removable cap.

The liquid chemical held inside the bottle shaped, dispenser can flow to either top or bottom nozzle with top dispensing used most of the time and bottom dispensing used when the bottle is low with liquid chemical.

This patent does not have a dedicated, top mounted ventilation hole protected by a one-way diaphragm which allows air down, but, does not allow liquid to move up. ~~My patent~~ The present inventor's patent in its preferred embodiment for extremely viscous liquid chemicals includes such a valve. This dedicated, top mounted ventilation hole is necessary for proper efficient dispensing in order to avoid production of a vacuum inside the container with continuous dispensing actions. Otherwise, air must enter from the bottom spout after one, dispensing, liquid squeeze uses up the available air in the closed container. Interrupted dispensing actions allows air to come back up through the single bottom spout in a "hiccup" action with non-viscous liquids and failed operation with viscous liquids causing the user to turn the

bottle right-side up which clears viscous liquid out of the bottom-nozzle.

This Rocchio patent will allow use of the dual-use, top opening as an air intake opening even when it is not designed or specified for this purpose while the liquid dispensing occurs on the single-use, bottom nozzle. The drawback of this Rocchio design is that viscous and air hardened, liquid chemical will in all probability clog or partially clog the current top opening blocking or reducing the air intake of a duo-use nozzle. If the top opening is made large it will reduce such air blockage problems.

This Rocchio patent also does not have a drip catching removable bottom piece, so, liquid drips will fall on a table or floor. The present inventor's patent both in its preferred embodiment for a very high viscosity liquid chemical, and also in a 1st alternative embodiment for a very low viscosity liquid chemical which uses a closed top of container of the preferred embodiment, and also for a 2nd alternative embodiment for medium viscosity liquid chemical which both seals off the top of the first embodiment and removes the flip-open and flip-close nozzle cap also called a reversible anti-drip nozzle cap, all embodiments have a false bottle bottom or drip-catching stand to prevent this problem.

This Rocchio patent describes a recessed bottom with a built-in, stand to cover the bottom-nozzle and bottom-cap.

SUMMARY - Paraphrase of Main Claim

A personal size, bottle device (100) for dispensing liquid chemicals (204) ~~with means for dispensing of the liquid chemicals~~ which dispenses the liquid chemicals (204) utilizing gravity-fed operation through the dedicated to outstroke liquid and not air (200) real bottle bottom with nozzle (108) with a preferred embodiment designed for extremely viscous liquid chemicals dedicated to intake air and not outstroke liquid, twist ventilation only cap (102), real bottle top with ventilation hole (104) used for air (200) intake through a one-way trap door diaphragm (103). Numerous embodiments too numerous to mention or specifically draw are obvious to a medium skilled packaging designer with knowledge of the preferred embodiment with the use of different industry prior art 'plastic fittings' on either end of the bottle along with removal of parts for less viscous liquid chemicals requiring less air intake. A first alternative embodiment intended for very low viscosity liquid chemical is obviously obtained by removing parts from the preferred embodiment being a sealed top of bottle, including a sealed tube top. A second alternative embodiment for medium viscosity liquid chemical is obviously obtained by using the first alternative embodiment removing more parts from the preferred embodiment being a sealed top of bottle and additional removal of the flip-open and flip-close nozzle cap or reversible anti-drip nozzle cap. Any industry prior art, 'plastic fitting' or 'plastic closure' can be used on either end of the invention.

OBJECTS & ADVANTAGES - Over Prior Art

A. An object of this invention is to prevent the nagging wait for a prior art bottle turned upside-down to drain especially from a low bottle with thick Liquid chemicals (204).

B. An object of this invention is to prevent the dispensing of air (200) and non-emulsified liquid from liquid chemical (202) which floats to the top of a prior art bottle.

C. An object of this invention is to stop the waste of liquid chemical(204) at the bottom of prior art bottles which is now often thrown away.

D. An object of this invention is to stop the waste of liquid chemical(204) at the sides of prior art bottles which clings there after the bottle is turned upside down and increases in amount when the bottle is near empty.

E. An object of this invention is to not require the need to flip the bottle (100) upside down to dispense liquid chemical(204) such as in motor oil which creates messy spills when the target is missed and wastes effort.

F. An object of this invention is to be inexpensive and convenient to use in comparison to prior art bottles.

G. An object of this invention is that it can be made with current manufacturing technologies for glass and plastic.

H. An object of this invention that can use for extremely dense liquid chemicals as in the preferred embodiment of the invention is ~~that it uses~~ a dedicated twist ventilation only cap (102), and real bottle top with ventilation hole (104) for air (200) ventilation and a dedicated, real bottle bottom with nozzle (108) for bottom only dispensing of the liquid chemical (204).

I. An object of this invention is that it that can use for extremely dense liquid chemicals as in the preferred embodiment of the invention ~~uses~~ a special one-way trap door diaphragm (103) type of diaphragm at the top of the bottle (100) to stop accidental liquid chemical (204) spills from the real bottle top with ventilation hole (104) and twist ventilation only cap (102).

~~J. An object of this invention in the first alternative embodiment designed for very thin viscosity liquid chemical is to supply an embodiment which is a very low cost, disposable bottle for one time dispensing of things such as motor oil, anti-freeze, fuel injector cleaner, oil treatments, gasoline treatments, brake fluid, transmission fluids, etc.~~

~~K. An object of this invention when used in an embodiment of an upside down, upwards thumb depressed or sideways hand squeezed,~~

~~operated spray bottle (100). An object of this embodiment with hand-spray bottles (100) is to stop the frustrating "air intake" (200) strokes which occur when a half empty prior art, top spray, bottle is used tipped to the side. In a prior art, top spray bottle with a suction tube, frustrating "air intake" (200) strokes occur and liquid chemical (204) is wasted with half empty bottles used tipped to the side creating air (200) pockets around the base of the suction tube.~~

~~...~~

Z. Further objects and advantages of my invention will become apparent from a consideration of the drawings and ensuing description of it.

BRIEF DESCRIPTION OF DRAWINGS - All Embodiments

Fig. 1 is a perspective drawing of the preferred embodiment of the invention intended for extremely viscous liquid chemical, a gravity-fed liquid chemical dispenser bottle (100), as it would appear standing on a kitchen table (208).

Fig. 2 is a close-up view of the actions of optionally twisting the twist ventilation only cap (102) in the preferred embodiment intended for extreme viscosity liquid chemical, and removing the false bottle bottom or stand (112) to expose the real bottle bottom with nozzle (108) also called a prior art 'plastic fitting (usually made of high density polyethylene compound (HDPE) plastic).' The flip-off/flip-on nozzle cap (110) with a screw-on and screw-off base which attaches to the real bottle bottom with nozzle (108), is also a 'plastic fitting' also called a 'plastic closure' which also has further attachments for a reversible anti-drip control mechanism device on real nozzle bottom with nozzle (108) is shown in a closed position.

Fig. 3 is a close-up view of the action of the preferred embodiment intended for extremely viscosity liquid chemical dispensing liquid chemical (204) through the real bottle bottom with nozzle (108) or 'plastic fitting (usually made of high density polyethylene compound (HDPE) plastic).' after removal of the false bottle bottom or stand (112) and opening the flip-off/flip-on nozzle cap (110) with a screw-on and screw-off base which attaches on real nozzle bottom with nozzle

(108). A hamburger (206) is shown to receive the liquid chemical (204) which in this case is ketchup.

Fig. 4 is a close-up view of the action of the preferred embodiment intended for extremely viscosity liquid chemical closing the flip-off/flip-on nozzle cap (110) on real bottle bottom with nozzle (108), and placing the liquid chemical bottle body (106) back upon the false bottle bottom or stand (112). The twist ventilation only cap (102) is lastly twisted shut.

~~Fig. 1 is a perspective drawing of the invention, a gravity-fed liquid chemical dispenser bottle (100), as it would appear standing on a kitchen table (208).~~

~~Fig. 2 is a close-up view of the actions of optionally twisting the twist ventilation only cap (102), and removing the false bottle bottom or stand (112) to expose the real bottle bottom with nozzle (108). The flip-off/flip-on nozzle cap (110) on real nozzle bottom with nozzle (108) is shown in a closed position.~~

~~Fig. 3 is a close-up view of the action of dispensing liquid chemical (204) through the real bottle bottom with nozzle (108) after removal of the false bottle bottom or stand (112) and opening the flip-off/flip-on nozzle cap (110) on real nozzle bottom with nozzle (108). A hamburger (206) is shown to receive the liquid chemical (204) which in this case is ketchup.~~

~~Fig. 4 is a close-up view of the action of closing the flip-off/flip-on nozzle cap (110) on real bottle bottom with nozzle (108), and placing the liquid chemical bottle body (106) back upon the false bottle bottom or stand (112). The twist ventilation only cap (102) is lastly twisted shut.~~

~~Fig. 5 is a standing view of an alternative embodiment, very low cost, gravity-fed liquid chemical dispenser bottle (100) meant for~~

~~disposable, 1-time dispensing use which uses a very low cost, 5-piece design.~~

~~Fig. 6 is a standing view of an alternative embodiment, gravity-fed liquid chemical dispenser bottle (100) meant for a bottom dispensing, spray bottle with a hand-squeeze pump piston (158) mechanism.~~

LIST OF REFERENCE NUMERALS - All Embodiments

The preferred embodiment is meant for extremely viscous liquid chemicals such as house-hold glue, mustard, honey, pharmaceutical gels, pharmaceutical heavy creams and ointments, etc. .

100. gravity-fed liquid chemical dispenser bottle

102. twist ventilation only cap

103. one-way trap door diaphragm

also called a reversible one-way diaphragm device which allows air inwards into the bottle, but, never allows liquid chemical outwards from the bottle

104. real bottle top with ventilation hole

NOTE: that real means structure of predominant action upon the liquid chemical.

106. liquid chemical bottle body

NOTE: this two-ended bottle body in the preferred embodiment has a narrow throat opening which customarily in a prior art, top dispensing, single dispensing-end only, opening bottle has on

its outer surface a male screw thread to accommodate a prior art 'plastic fitting' or 'plastic closure.'

108. real bottle bottom with nozzle

NOTE: this is also called in industry jargon a 'plastic fitting' or 'plastic closure' with a usual screw-on and screw-off attachment of female thread which attaches to the male thread of the narrow throat opening mentioned in (106). 'Real' means the part with significant action with the liquid chemical.

110. flip-off/flip-on nozzle cap or reversible anti-drip control mechanism device

NOTE: In prior art, convenience sized, top dispensing embodiments, this structure can be a screw-on and screw-off base which is a two cavity injection molded part having a permanent plastic hinge to a snap-on and snap-off lid cap for the nozzle.

This part in other prior art as in convenience sized, top dispensing,

plastic mustard bottles is a snap-on, semi-permanent, screw-on and screw-off cap which exposes the nozzle's external opening for liquid dispensing.

This part in general in a prior art, bottom dispensing bottle of prior art functions in structure as a reversible anti-drip control mechanism device and a functional structural equivalent is a one-way silicone slit-valve (Redmond patent, Fitten patent) which can be glued to the inside of the real bottle bottom with nozzle (108).

111. twist-open and twist-close nozzle cap with screw-on and screw-off base

or reversible anti-drip control mechanism device

NOTE: this is a prior art 'plastic fitting' or 'plastic closure' usually of a two one-body injection molded design.

111a. one-way slit valve or reversible anti-drip control mechanism device

NOTE: prior art mechanism from top dispensing public use and also the Redmond patent, and Fitten patent for bottom dispensing use which inserts into the insides of the real bottle bottom with nozzle (110) for glue attachment.

112. false bottle bottom or stand

NOTE: this part in prior art, top dispensing, convenience sized, plastic

dispensing bottles can permanently attach to the middle-end of
the real bottle bottom with nozzle or 'plastic fitting' by using
a flexible plastic hinge in a two cavity injection molded
'plastic fitting' part. Real denotes the part of principal
action with the liquid chemical, so, false denotes a part of
false appearance or limited principal use, however, it has vital
secondary use of hermetic sealing and water-tight sealing as
well as either primary as a principal nozzle cap or a secondary
nozzle cap with primary drip-control duty, which makes the
invention marketable over the prior art.

~~On 1st Alternative Embodiment Only~~

~~150. top self-adhesive seal~~

~~152. twist open nozzle cap~~

~~154. bottom self-adhesive seal~~

~~On 2nd Alternative Embodiment Only~~

~~156. twist open and close drip deactivator~~

~~158. hand squeeze pump piston~~

~~160. adjustable spray pattern nozzle~~

Following Parts are not part of Invention:

200. air

202. non-emulsified liquid from liquid chemical

204. liquid chemical

206. hamburger

208. kitchen table

DESCRIPTION OF INVENTION - Detailed Description of Drawings - Preferred Embodiment

Fig. 1 is a perspective drawing of the invention, a gravity-fed liquid chemical dispenser bottle (100), as it would appear standing on a kitchen table (208).

The twist ventilation only cap (102) is shown, the one-way trap door diaphragm (103) is shown, the real bottle top with ventilation hole (104) is shown, the liquid chemical bottle body (106) is shown, the real bottle bottom with nozzle (108) is shown, and the false bottle bottom or stand (112) is shown. The non-emulsified liquid from liquid chemical (202) is shown settling to the top of the liquid chemical (204). The liquid chemical (204) is shown. The gravity-fed liquid chemical dispenser bottle (100) may be optionally shaken before use.

Fig. 2 is a close-up view of the actions of optionally twisting the twist ventilation only cap (102), and removing the false bottle bottom or stand (112) to expose the real bottle bottom with nozzle (108). The flip-off/flip-on nozzle cap (110) on real nozzle bottom with nozzle (108) is shown in a closed position.

The actions of twisting the twist ventilation only cap (102) to prevent a vacuum on large dispenses is shown. The one-way trap door diaphragm (103) is shown below the twist ventilation only cap (102)

with the intended action of allowing air (200) intake in a downwards motion and preventing liquid dispensing from the twist ventilation only cap (102) and real bottle top with ventilation hole (104) which prevents the unwanted effect of dried liquid chemical (204) blocking or partially blocking the dedicated top nozzle. The flip-off/flip-on nozzle cap (110) on real nozzle bottom with nozzle (108) is shown in a closed position. The real bottle top with ventilation hole (104) and the real liquid chemical bottle body (106) are shown. The action of removing the false bottle bottom or stand (112) to expose the real bottle bottom with nozzle (108) is shown. The flip-off/flip-on nozzle cap (110) on real nozzle bottom with nozzle (108) is shown in a closed position.

Fig. 3 is a close-up view of the action of dispensing liquid chemical (204) through the real bottle bottom with nozzle (108) after removal of the false bottle bottom or stand (112) and opening the flip-off/flip-on nozzle cap (110) on real nozzle bottom with nozzle (108). A hamburger (206) is shown to receive the liquid chemical (204) which in this case is ketchup.

An obvious first alternative embodiment can be made for very low viscosity liquid chemicals by simply sealing off the top of the preferred embodiment container due to less need for anti-vacuum air intake (with a tube version being obvious to a skilled packaging designer). An obvious second alternative embodiment can be made for medium viscosity liquid chemicals by simply sealing off the top of the preferred embodiment due to less need for anti-vacuum air intake, and

also be eliminating the flip-on/flip-off nozzle cap which serves as an anti-drip valve (with a tube version also being obvious). Obvious flip-on/flip-off nozzle cap or anti-drip valve replacement 'plastic fittings' or 'plastic closures' from the prior art of personal sized, top dispensing plastic bottles can be readily used which simply screw onto the male thread on the outside of the bottle's narrow throat opening.

The twist ventilation only cap (102) is shown already twisted open, the real bottle top with ventilation hole (104) is shown letting in air (200), the liquid chemical bottle body (106) is shown. The non-emulsified liquid from liquid chemical(202) is shown settling to the top of the liquid chemical(204). The liquid chemical(204) is shown.

Fig. 4 is a close-up view of the action of closing the flip-off/flip-on nozzle cap (110) on real bottle bottom with nozzle (108), and placing the liquid chemical bottle body (106) back upon the false bottle bottom or stand (112). The twist ventilation only cap (102) is lastly twisted shut.

The real bottle top with ventilation hole (104) is shown. The non-emulsified liquid from liquid chemical(202) is shown settling to the top of the liquid chemical(204).

ADVANTAGES OF INVENTION - Preferred Embodiment - How the Objects are Achieved

A. An advantage of this invention is that it prevents the nagging wait for a prior art bottle turned upside-down to drain especially from a low bottle with thick condiments/pharmaceuticals.

This is due to the gravity-fed operation and bottom dispensing in the said invention.

B. An advantage of this invention is that it prevents the dispensing of air (200) and non-emulsified liquid from liquid chemical (202) which floats to the top of a prior art bottle.

This is due to the air (200) and non-emulsified liquid from liquid chemical (202) remaining on top while the dispensing is from the bottom in the said invention.

C. An advantage of this invention is that it stops the waste of liquid chemical (204) at the bottom of prior art bottles which is now often thrown away.

This is due to dispensing from the bottom in the said invention. Furthermore, prior art bottles required tipping the container over which deposited liquid chemical (204) from the previous bottom upon the gravity drained sides of the container.

D. An advantage of this invention is that it stops the waste of liquid chemical(204) at the sides of prior art bottles which clings there after the bottle is turned upside down and increases in side cling amount when the prior art bottle is near empty.

This is prevented by dispensing from the bottom of the said invention. Furthermore, prior art bottles required tipping the container over which deposited liquid chemical(204) from the previous bottom upon the gravity drained sides of the container.

E. An advantage of this invention is that it does not require the need to flip the prior art bottle upside down to dispense liquid chemical(204) such as in motor oil which creates messy spills and wastes effort when the target is missed.

This is prevented in the said invention by dispensing from the real bottle bottom with nozzle (108).

F. An advantage of this invention is that it is inexpensive and convenient to use in comparison to prior art bottles.

This is due to simple design and use of low cost materials in the said invention just as in prior art bottles.

G. An advantage of this invention is that it can be made with current manufacturing technologies for glass and plastic.

This is due to simple design in the said invention just as in prior art bottles.

H. An advantage of this invention is that it ~~uses~~ can use for extremely dense liquid chemical in its preferred embodiment a dedicated twist ventilation only cap (102), real bottle top with ventilation hole (104) for air (200) ventilation and a dedicated to liquid, real bottle bottom with nozzle (108) for bottom only dispensing of the liquid chemical(204).

This allows "smooth and continuous" operation without "hiccupping actions" from a single nozzle for air (200) and liquid. This also prevents dried liquid chemical(204) from blocking or partially blocking the top twist ventilation only cap (102), one-way trap door diaphragm (103), and real bottle top with ventilation hole (104) if it is also used for liquid chemical(204) dispensing.

I. An advantage of this invention is that it ~~uses~~ can use for extremely dense liquid chemical in its preferred embodiment a special one-way trap door diaphragm (103) type of diaphragm at the top of the bottle to stop accidental liquid chemical(204) spills from the real bottle top with ventilation hole (104) and twist ventilation only cap (102) and also to stop liquid chemical(204) dispensing from the top

which will clog said real bottle top with ventilation hole (104) after drying.

This insures that the twist ventilation only cap (102) and real bottle top with ventilation hole (104) is used only for air intake and not liquid chemical (204) dispensing preventing hardening "gum up" and also accidental spills from the top if the bottle is flipped upside-down for a top-dispensing customer action by mistake.

...

~~Description of 1st Alternative Embodiment:~~

~~Fig. 5 is a standing view of an alternative embodiment, very low cost, Gravity-fed liquid chemical dispenser bottle (100) meant for disposable, 1-time dispensing use which uses a very low cost, 5-piece design:~~

- ~~1). A top self adhesive seal (150),~~
- ~~2). one-way trap door diaphragm (103),~~
- ~~3). single piece bottle body consisting of a real bottle top with ventilation hole (104), a real bottle bottom with nozzle (108) having a built-in, false bottle bottom or stand surrounding the real bottle bottom with nozzle (108) as shown,~~

~~4). a twist open nozzle cap (152) is placed upon the real bottle bottom with nozzle (108),~~

~~5). A bottom self-adhesive seal (154) is put on the real bottle top with ventilation hole (104).~~

~~Removal of the top self-adhesive seal (150) and then bottom self-adhesive seal (154), and slowly twisting open the twist open nozzle cap (152) will dispense the contents in a controlled manner.~~

~~Operation of the 1st Alternative Embodiment:~~

~~Fig. 5 is a standing view of an alternative embodiment, very low cost, Gravity fed liquid chemical dispenser bottle (100) meant for disposable, 1-time dispensing use which uses a very low cost, 5-piece design:~~

~~1). A top self adhesive seal (150),~~

~~2). one-way trap door diaphragm (103),~~

~~3). single piece bottle body consisting of a real bottle top with ventilation hole (104), a real bottle bottom with nozzle (108) having~~

~~a built-in, false bottle bottom or stand surrounding the real bottle bottom with nozzle (108) as shown,~~

~~4). a Twist Open Nozzle Cap twist open nozzle cap (152) is placed upon the real bottle bottom with nozzle (108),~~

~~5). A bottom self-adhesive seal (154) is put on the real bottle top with ventilation hole (104).~~

~~— Removal of the top self-adhesive seal (150) and then bottom self-adhesive seal (154), and slowly twisting open the twist open nozzle cap (152) will dispense the contents in a controlled manner. The package is thrown away after dispensing.~~

~~Advantages of the 1st Alternative Embodiment:~~

~~— Are the same as for the preferred embodiment excepting that the cost of manufacture is especially low for one-time, dispensing use.~~

~~Examples of use are for motor oil, packaged drinks, etc.~~

~~J. An advantage of this invention is that it uses a special one-way trap door diaphragm (103) type of diaphragm at the top of the bottle (100) to stop accidental liquid chemical (204) spills from the real~~

~~bottle top with ventilation hole (104) and twist ventilation only cap
(102).~~

~~ALTERNATIVE EMBODIMENTS - Description, Operation and Advantages of 2nd
Alternative Embodiment~~

~~Description of 2nd Alternative Embodiment:~~

~~Fig. 6 is a standing view of an alternative embodiment, Gravity-fed liquid chemical dispenser bottle (100) meant for a bottom dispensing, spray bottle with a hand squeeze pump piston (158) mechanism.~~

~~Operation of 2nd Alternative Embodiment:~~

~~Fig. 6 shows the twist open and close drip de-activator (156) opened for spraying, the adjustable spray pattern nozzle (160) is set to the preferred spray pattern, and the hand squeeze pump piston (158) is squeezed in and out to force air into the piston mechanism which will force a squirt of liquid chemical (204) out of the adjustable spray pattern nozzle (160).~~

~~Advantages of 2nd Alternative Embodiment:~~

~~Same advantages as for preferred embodiment over prior art spray bottles. Also there is no air (200) intake strokes when spraying at odd angles or when the liquid chemical (204) is very low exposing a~~

~~prior art pump spray bottle's upward feed tube. There is no upwards feed tube in Fig. 6, just a real bottle bottom with nozzle (108).~~

K. ~~An advantage of this invention used in an embodiment of a bottom-fed, bottom placed, hand-spray bottles which are upwards thumb depressed or sideways hand-squeezed into the bottle body (106). No frustrating "air (200) intake" strokes occur when a half-empty bottle is used slightly tipped to the side. In a prior art, top spray bottle with a suction tube, frustrating "air intake" (200) strokes occur and liquid chemical (204) is wasted with half empty bottles used slightly tipped to the side creating air (200) pockets around the base of the suction tube.~~

~~No suction tube is required and no air (200) pockets occur at slight, odd use angles with the said invention.~~

DESCRIPTION OF INVENTION - Conclusion and Scope of Invention

A. This invention prevents the nagging wait for a prior art bottle turned upside-down to drain especially from the bottom of the bottle.

B. This invention prevents the dispensing of air (200) and non-emulsified liquid from liquid chemical (202) which floats to the top of a prior art bottle.

C. This invention stops the waste of liquid chemical (204) at the bottom of prior art bottles which is now often thrown away.

D. This invention stops the waste of liquid chemical (204) at the sides of prior art bottles which clings there after the bottle is turned upside down and increases in amount when the bottle (100) is near empty.

E. This invention stops the need to flip the bottle (100) upside-down as for ketchup or motor oil which can result in messy spills when the target is missed.

F. This invention is inexpensive and convenient to use in comparison to prior art bottles.

G. This invention can be made with current manufacturing technologies for glass and plastic just like prior art bottles.

H. This invention can use in its preferred embodiment intended for extremely dense liquid chemicals (e.g. glue, honey, mustard) ~~it uses~~ a dedicated, twist ventilation only cap (102), and real bottle top with ventilation hole (104) for air (200) ventilation and a dedicated, real bottle bottom with nozzle (108) for bottom only dispensing of the liquid chemical(204). This effect is achieved by the one-way trap door diaphragm (103) which prevents liquid chemical(204) dispensing from the top nozzle.

I. This invention ~~uses~~ uses in its preferred embodiment intended for extremely dense liquid chemicals (e.g. glue, honey, mustard) a special one-way trap door diaphragm (103) at the top of the bottle (100) to stop accidental liquid chemical(204) spills from the real bottle top with ventilation hole (104) and twist ventilation only cap (102) and also to stop liquid chemical(204) dispensing from the top which will clog with hardened liquid chemical (204) the top air ventilation hole on the bottle or real bottle top with ventilation hole (104) after drying.

J. ~~This invention has an a first alternative embodiment which works for extremely low viscosity liquid chemical of a very low cost, disposable bottle for one-time dispensing of things such as motor oil, anti-freeze, fuel injector cleaner, oil treatments, gasoline treatments, brake fluid, transmission fluids, etc.~~

K. ~~This invention has an alternative embodiment of a good bottom-fed, bottom placed, upwards thumb-depressed or sideways hand-squeezed~~

~~action, hand spray bottle (100) which is resistant to frustrating "air (200) intake" dispenses when used with a low bottle or at odd angles.~~

...

While my above description contains many specifications, these should not be construed as limitations on the legal claims of the invention, but rather as an example of one preferred embodiment thereof. Many other variations or primary ~~secondary~~ and secondary alternative preferred embodiments are possible. For example, the lesser densities of liquid chemical may be handled by simply removing structure intended to enhance air intake on the squeeze out stroke which always accompanies the squeeze in-stroke as nature abhors a vacuum. For example an embodiment for very low viscosity liquid chemical is obvious which simply removes the top structure of the preferred embodiment and uses a sealed bottle. An obvious ramification is a tube structure which is a ceiling pointed, open ended cylinder at the factory, which is tube filled with liquid chemical in a tube filling operation, and then the top of the tube is closed, pressure crimped, and heat sealed with a heat lug. An obvious ramification for medium viscosity liquid chemical is removal of the top structure of the preferred embodiment using a sealed top bottle or tube, and removing the flip-on/flip-off nozzle cap or reversible anti-drip valve. Any prior art from personal sized, top dispensing bottles of 'plastic fittings' or 'plastic closures' can be screw-on attached to the bottle's male threaded nozzle for use as a substitute for the flip-on/flip-off nozzle cap or

reversible anti-drip valve. For example a fully or partially removable false twist ventilation only cap (102) or fully attached twist ventilation only cap (102) can be optionally used. The bottle body (106) may be of any material including squeezable plastic, hard plastic, glass (will require a shaking motion, larger ventilation opening (104), and a larger dispensing nozzle), etc. The bottle (100) may be of any shape avoiding top-heavy design. The flip-off/flip-on nozzle cap (110) may be twist open and close, or flip open and close, or spray with a push-cap and feed. The false bottle bottom or stand (112) can be screw-on for spill safety, flip-on, or snap on for convenience or a combination of both. The false bottle bottom or stand (112) can be fully or partially detachable. Accordingly, the scope of the invention should be determined not by the embodiment(s) illustrated, but by the appended claims and their legal equivalents.

ABSTRACT:

[NOTE: Abstract was shortened to less than 150 words as per action of the initial patent examiner's office under 37 CFR 1.72(b).]

The abstract figure shows a gravity-fed liquid chemical dispenser bottle (100) with a broad representation of gravity feed features used for an extremely viscous chemical, which stops the irritating wait for a bottle turned upside down to dispense thick liquid chemical (204) such as condiments, pharmaceuticals, motor oil, glue, etc. especially with a low bottle, furthermore, many advantages accrue to this design including no human user flip container action leading to long impatient

user waits and messy spills, very little chemical waste from side and bottom cling, no air dispensing and non-emulsified liquid dispensing, furthermore, the device consists of a glass or squeezable plastic bottle shaped like a prior art ketchup bottle having a twist ventilation only cap (102) on top of the bottle, a one-way trapdoor diaphragm (103) or one-way diaphragm mechanism to prevent spills and liquid chemical (204) dispensing from the top, a real bottle top with ventilation hole (104) with top-end neck, a liquid chemical bottle body (106) with bottom-end neck, a real bottle bottom with nozzle (108) or nozzle fitting, a flip-off/flip-on anti-drip nozzle cap (110), and a false bottle bottom or stand (112) with an opposing end anti-drip cap. Separate embodiments of containers are described for less viscous fluids.

EOF